Model Name:GA-EP31-DS3L Rev:1.02

SHEET	TITLE
01	COVER SHEET
02	BLOCK DIAGRAM
03	BOM & PCB MODIFY HISTORY
04	L775_A
05	L775_B,D
06	L775_C
07	L775_E,F,G,H
08	BROADWATER HOST
09	BROADWATER DDR
10	BROADWATER PCI_EXP 16,DMI
11	BROADWATER VGA,MISC
12	BROADWATER GND
13	BROADWATER PWR
14	DDRII CHANNEL A-SHARE 1,2
15	DDRII CHANNEL B-SHARE 1,2
16	DDRII CLOCK BUFFER / TERMINATION
17	PCI EXPRESS*16 SLOT
18	ICH7 DMI, PCI, USB
19	ICH7 IDE, GPIO, SATA, CTRL
20	ICH7 VCC, GND
21	ICS9LPRS587 CLOCK.
22	ATX,ATX 12V CONNECT,BIOS
23	PCI EXPRESS*1 SLOT 1,2,3
24	PCI SLOT 1,2,3
25	HWM/ FAN CONTROL
26	IDE/FLOPPY
27	KB_PS2

SHEET	TITLE
28	FRONT PANEL
29	FRONT USB,REAL USB CONNECT
30	PROCESSOR HOT
31	ALC888
32	REAR AUDIO JACK
33	FRONT AUDIO CONNECTOR
34	RTL8111B
35	ITE 8718
36	COM_LPT
37	VCORE PWM ISL6334
38	DISCRETE POWER
39	GPIO DEFINE
40	GPIO DEFINE
41	
42	
43	
44	

Title	Cover Sheet	
Size: Custom	Document Number: EP31-DS3L	Rev: 1.02
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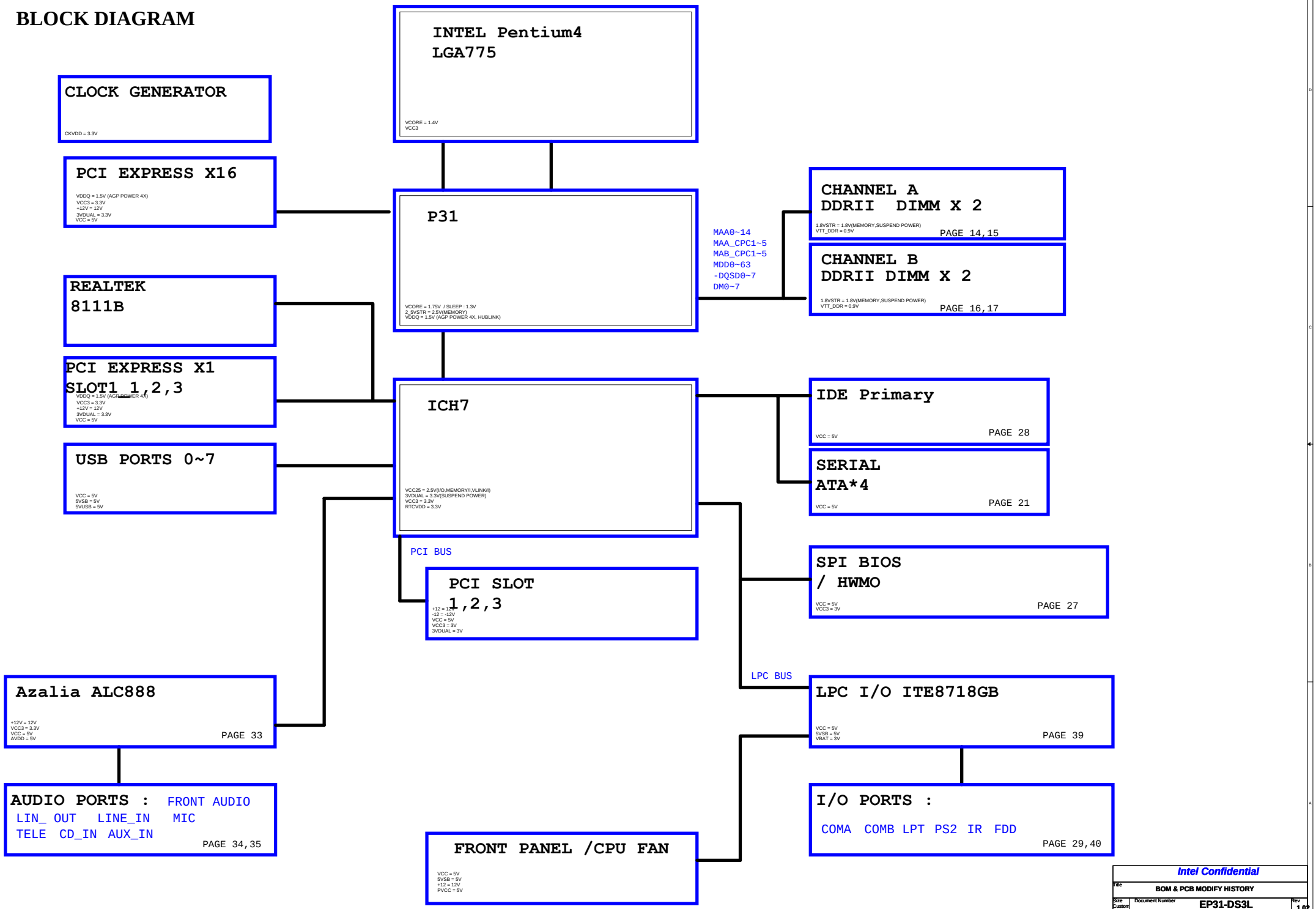
BLOCK DIAGRAM



Intel Confidential

Title	BOM & PCB MODIFY HISTORY	
Size: Custom	Document Number: EP31-DS3L	Rev: 1.02
Date: Tuesday, February 28, 2008	Sheet 2 of 40	

Model Name:GA-EP31-DS3L
Version:1.02

Component value change history

2008

Data	Change Item	Reason
10A	9M946DS3R-00-10A --> 9MP31S3-00-10A	
10B	1. PROCHOT R379 1.54K --> 1.8K , R377 21K --> 68.1K	
2007/7/27 EBOM:10B	1.由 GA-P31-DS3 1.04電路圖修改,但VCORE是貼P31-DS3L-1.02.	
	2.clcok buffer 946AFLF	
	3.MB_ID1 8.2k 以區別clock buffer 版本	
2007/8/09 PBOM:11A	1.由 GA-P31-DS3 1.04電路圖修改,但VCORE是貼P31-DS3L-1.02.	
	2.MB_ID1 8.2k-->1K 以區別clock buffer 版本	
2007/8/21 PBOM:11B	1.LEC3,EC5,EC4,EC12,EC18,EC26 560UF-->470UF/6.3V	
	2.DEC4,DEC1,DEC2,DEC3,EC37 470UF/16V加替料	
	3.EC30,EC31 等100UF/16 加替料	
2007/12/29 EBOM:10A	1.6334,ITE8268	
	2.8111C	
2008/01/17 EBOM:10B	1.8111B,ADD DR182,DR183,DR184,DR185,DR186,DQ31,Q395,R2364	
	2.R216 49.9-->680/4	
2008/01/17 EBOM:10C	1.BIOS size 8M-->4M; r2338 1k-->8.2k	
	2.修改ISL6622 pin6 線路,add DR187 ,DBC39	
	3. PCB改爲1.02版	
	4.PCIEX16 A4/B4 GND PIN ADD SHORT-WIRE,ADD CPU 1600MHz SUPPORT	
2008/02/26 PBOM:10D	1. PCB改爲1.02版	
	2. DEL C237,C238 FOR CPU CLOCK	

Circuit or PCB layout change for next version

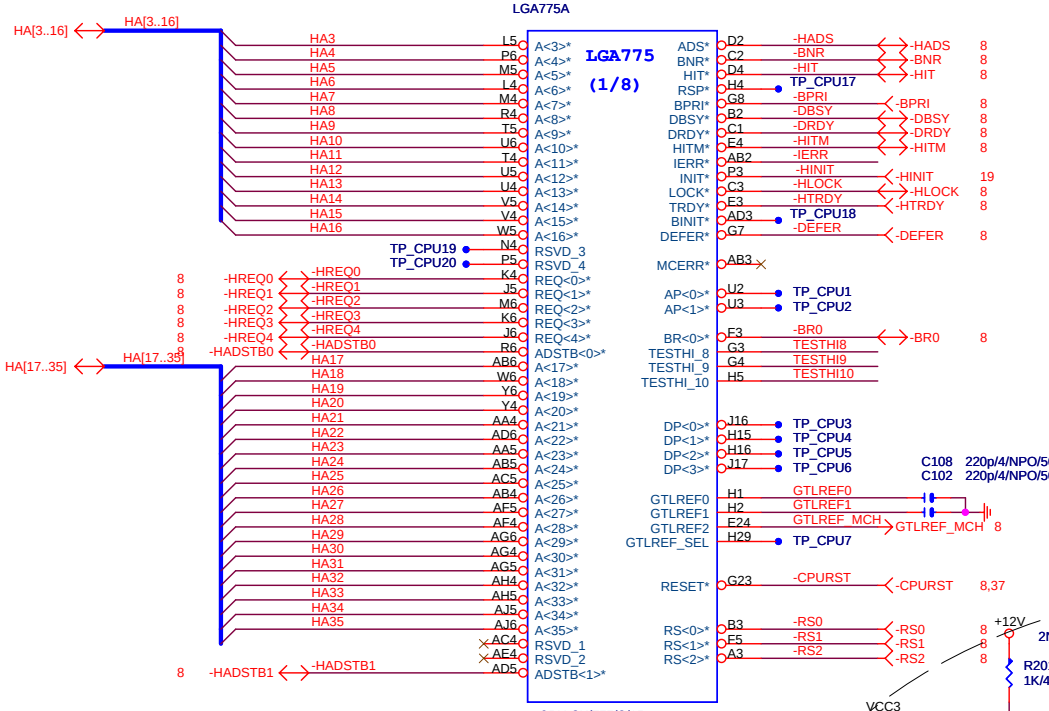
DATE	Change Item	Reason
3.3	1. 946GZ-DS3 REV2.02 --> 946-DS3 REV3.3	
	1. ADD FSB1333 CPU SUPPORT	
	2. ADD VTT_GMCH & 5VDUAL PROTECT	
	4. L3,L6 Footprint "CHOKE08U-15A_1P-1" ' "CHOKE08U-15A_1P-2"	
	5. L4,L5 Footprint "CHOKE2U-20A_SQ-1" ' "CHOKE08U-15A_1P-3"	
	6. 文字面增加 DDRII 800 , Quad Core CPU support	
備註:	946GZ無法超頻至FSB1333,但945P可超頻至FSB1333的原因	
	1. 因爲946GZ要超頻至FSB1333,須同時將PCI_E CLK超頻至124MHz,造成SATA硬碟抓不到(只要PCI_E CLK超頻超過120MHz以上,SATA硬碟就會抓不到,IDE HDD則不影響)	
	2. 945P CHIPS超頻至FSB1333時,PCI_E CLK只需超頻至114MHz即可,所以不影響SATA硬碟	
	3. 就算946GZ可超頻至FSB1333,使用IDE硬碟RUN,也會不穩,只能跑到FSB1280	
2007/7/17 PCB:1.03	1. ADD CLOCK BUFFER	
	2.由 GA-P31-DS3 1.04修改,但VCORE是貼P31-DS3L-1.02.	
2007/8/09 PCB:1.1	1.由 P31-DS3L-1.03 修改文字面成1.1 FOR PVT	
2007/12/11 PCB:1.0	1.由 P31-DS3L-1.1 修改成 GA-EP31-DS3L-1.0 FOR ENERGY SAVING	
2007/01/08 PCB:1.01	1.ADD GPIO14 / 預留PWM_FREQ / PWM2_CR	
2008/02/1 PCB:1.02	1.修改 ISL6622 PIN6線路	
	2.PCIEX16 A4/B4 GND PIN ADD SHORT-WIRE,ADD CPU 1600MHz SUPPORT	

Title	BOM & PCB MODIFY HISTORY		
Size: Custom	Document Number: EP31-DS3L		Rev: 1.02
Date: Wednesday, April 09, 2008	Sheet 3 of 40		

HA/REQ:4/14

ADSTB:4/17

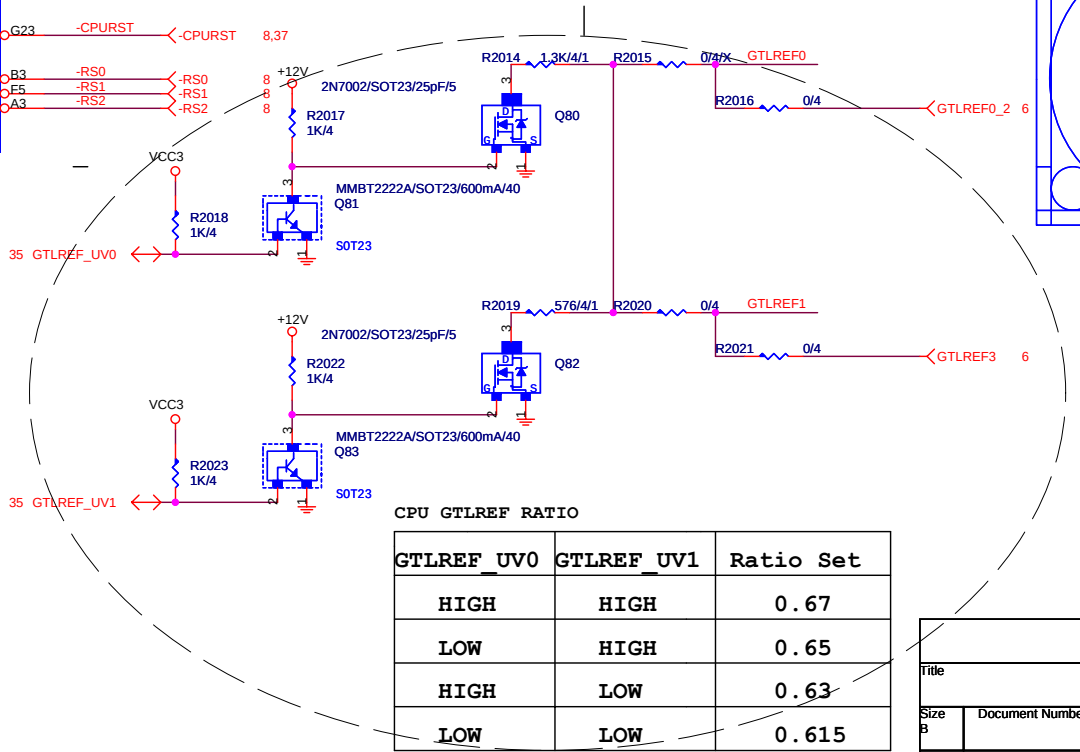
LGA775A



CPU-SK/775/S/15

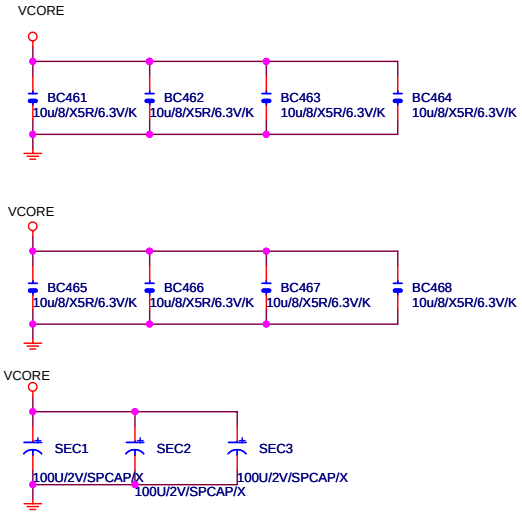
C108 220p/4/NPO/50V/J/X

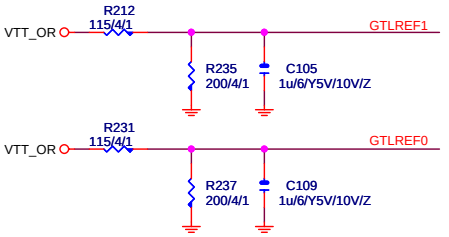
C102 220p/4/NPO/50V/J/X

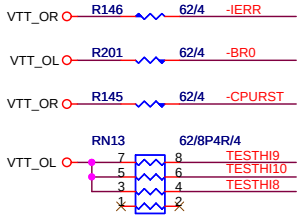


CPU GTLREF RATIO

GTLREF_UV0	GTLREF_UV1	Ratio Set
HIGH	HIGH	0.67
LOW	HIGH	0.65
HIGH	LOW	0.63
LOW	LOW	0.615

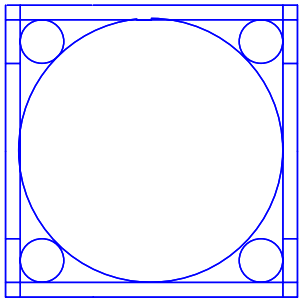






CR121

CPU RETAINTION/X



Gigabyte Technology

Title: P4_LGA775-A

Size: B | Document Number: EP31-DS3L | Rev: 1.02

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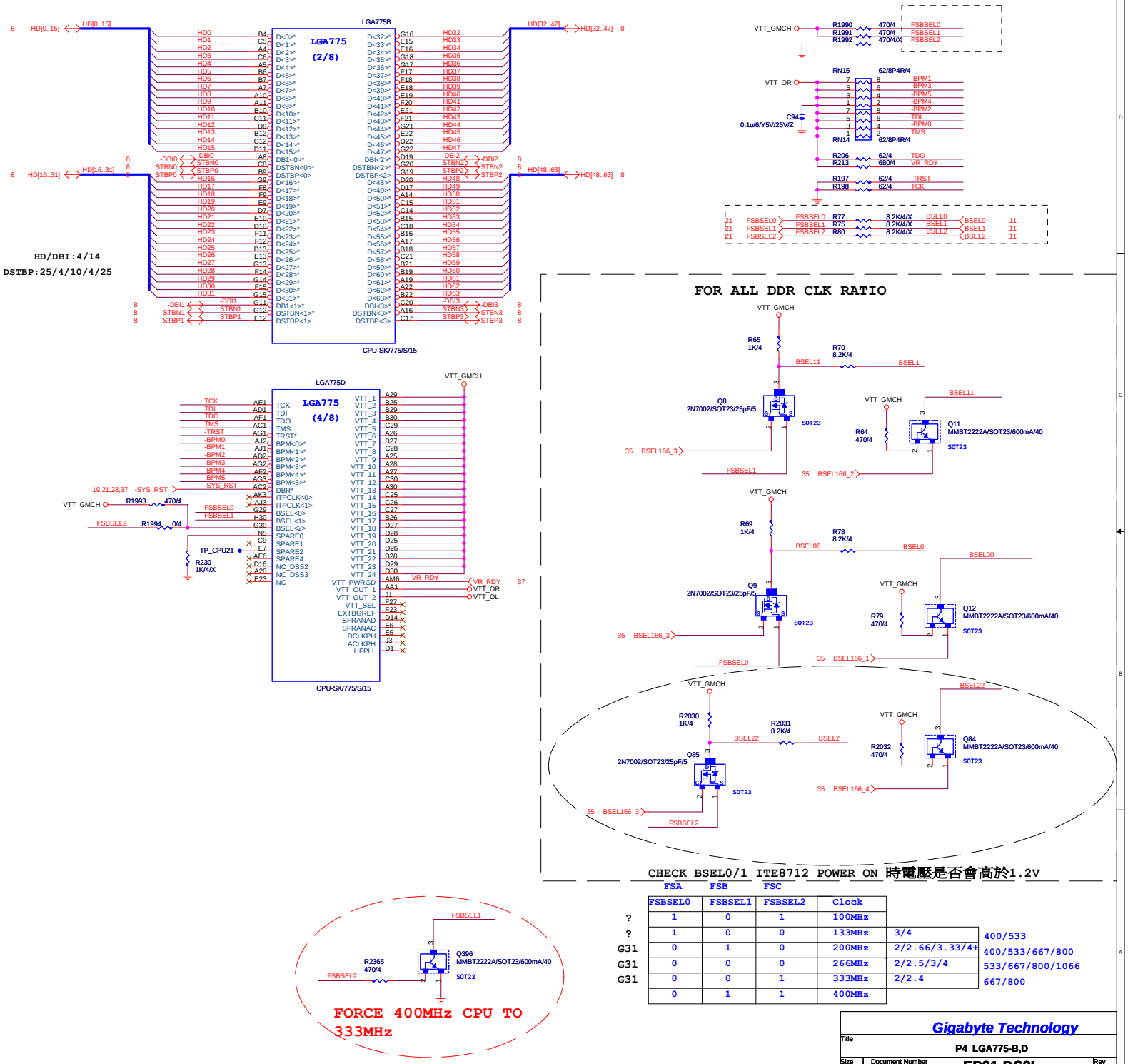
LGA775B
LGA775
(2/8)
CPU-SK/775/S/15
HD/DBI:4/14
DSTBP:25/4/10/4/25
LGA775D
LGA775
(4/8)
CPU-SK/775/S/15
VTT_GMCH
R1990 470/4 FSBSEL0
R1991 470/4 FSBSEL1
R1992 470/4/X FSBSEL2
RN15 62/8P4R/4
RN14 62/8P4R/4
R206 62/4 TDO
R213 680/4 VR_RDY
R197 62/4 -TRST
R198 62/4 TCK
R77 8.2K/4/X BSEL0
R75 8.2K/4/X BSEL1
R80 8.2K/4/X BSEL2
C94 0.1u/6/Y5V/25V/Z
FOR ALL DDR CLK RATIO
R65 1K/4
R70 8.2K/4
Q8 2N7002/SOT23/25pF/5
Q11 MMBT2222A/SOT23/600mA/40
R64 470/4
R69 1K/4
R78 8.2K/4
Q9 2N7002/SOT23/25pF/5
Q12 MMBT2222A/SOT23/600mA/40
R79 470/4
R2030 1K/4
R2031 8.2K/4
Q85 2N7002/SOT23/25pF/5
Q84 MMBT2222A/SOT23/600mA/40
R2032 470/4
R1993 470/4
R1994 0/4
R230 1K/4X
TP_CPU21
R2365 470/4
Q396 MMBT2222A/SOT23/600mA/40
FORCE 400MHz CPU TO 333MHz
CHECK BSEL0/1 ITE8712 POWER ON 時電壓是否會高於1.2v
FSA FSB FSC
FSBSEL0 FSBSEL1 FSBSEL2 Clock
? 1 0 1 100MHz
? 1 0 0 133MHz 3/4 400/533
G31 0 1 0 200MHz 2/2.66/3.33/4+ 400/533/667/800
G31 0 0 0 266MHz 2/2.5/3/4 533/667/800/1066
G31 0 0 1 333MHz 2/2.4 667/800
0 1 1 400MHz
Gigabyte Technology
Title P4_LGA775-B,D
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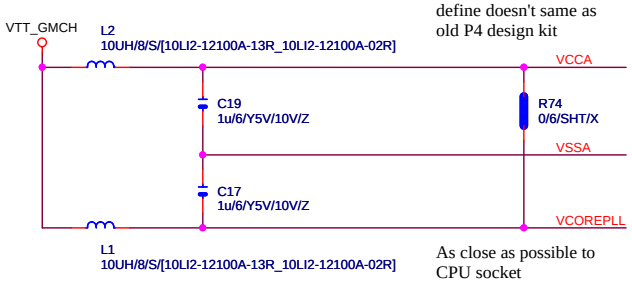
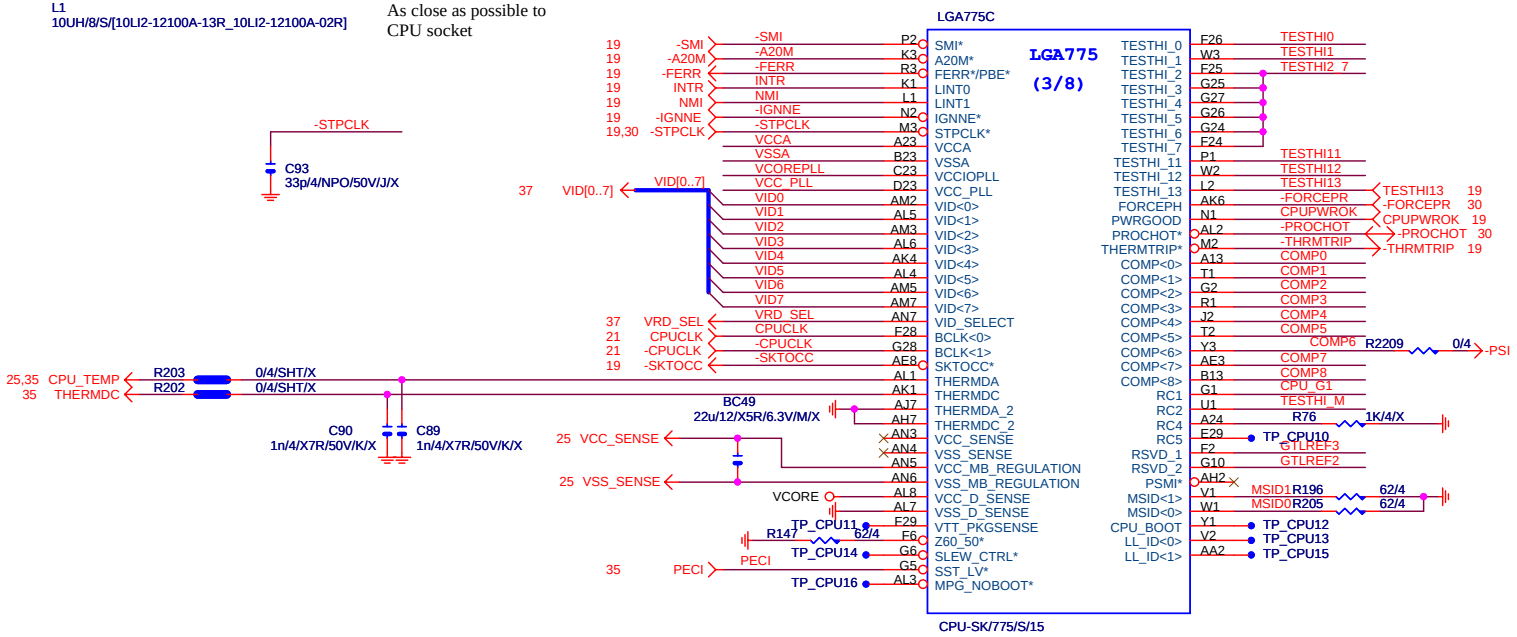
Note:

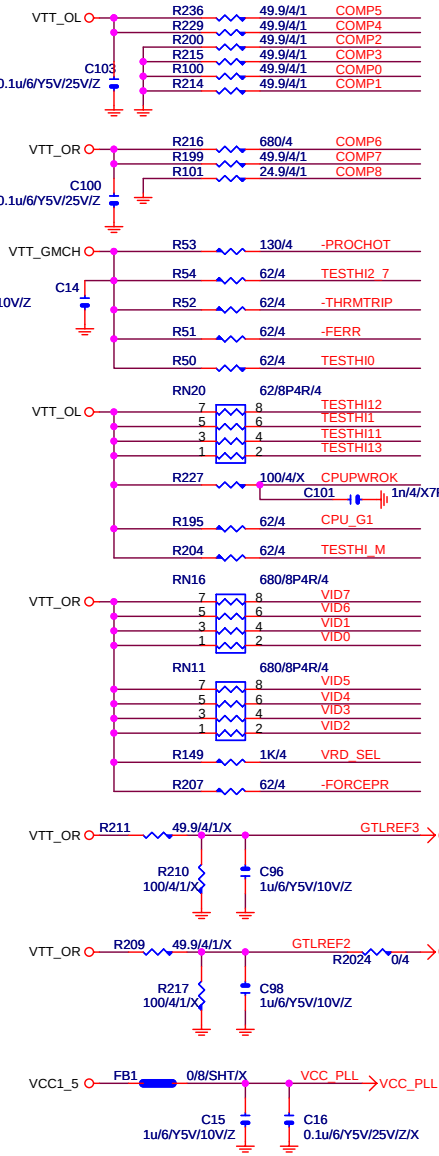
VCCA & VCOREPLL define doesn't same as old P4 design kit

Trace width doesn't less than 12 Mil

As close as possible to CPU socket

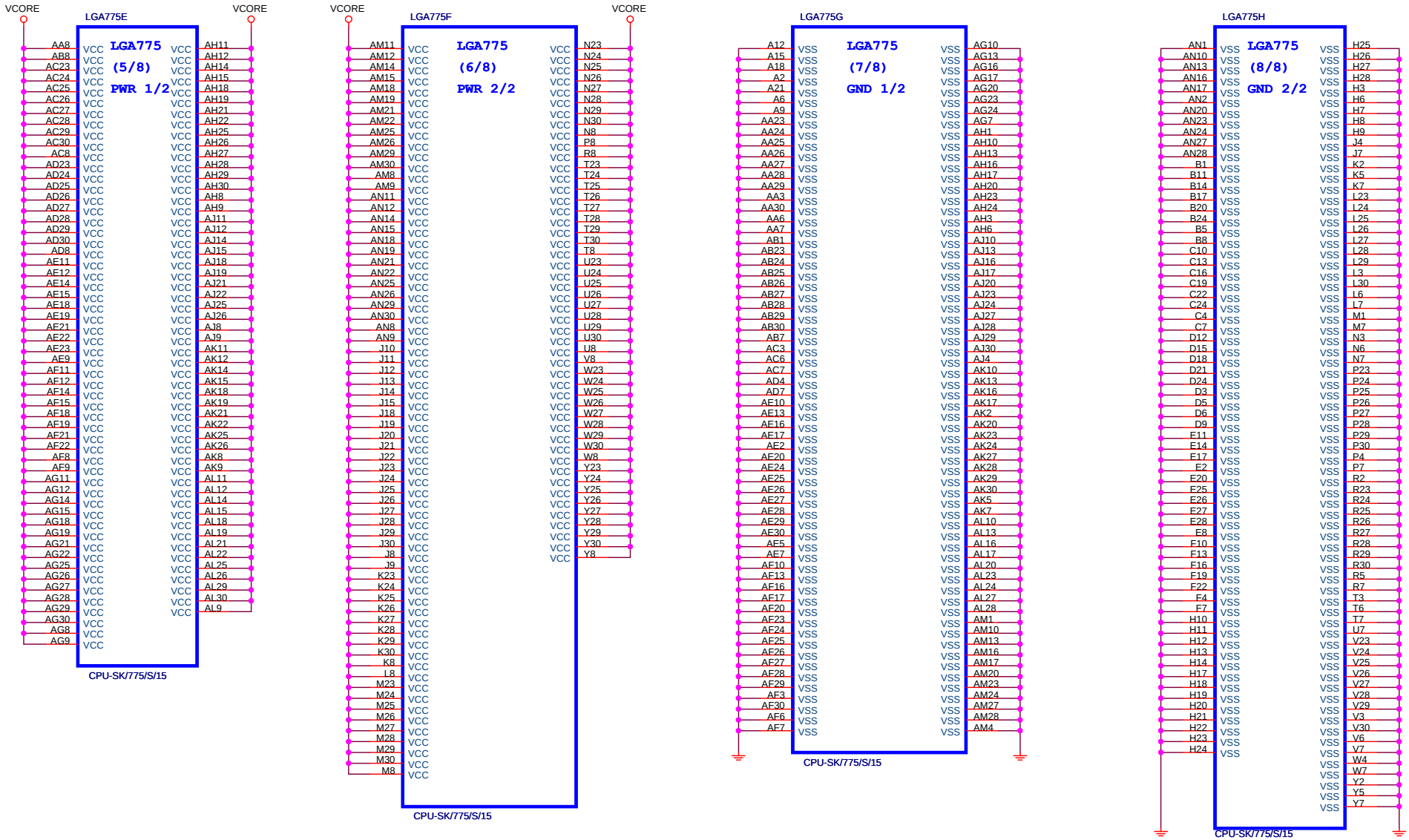




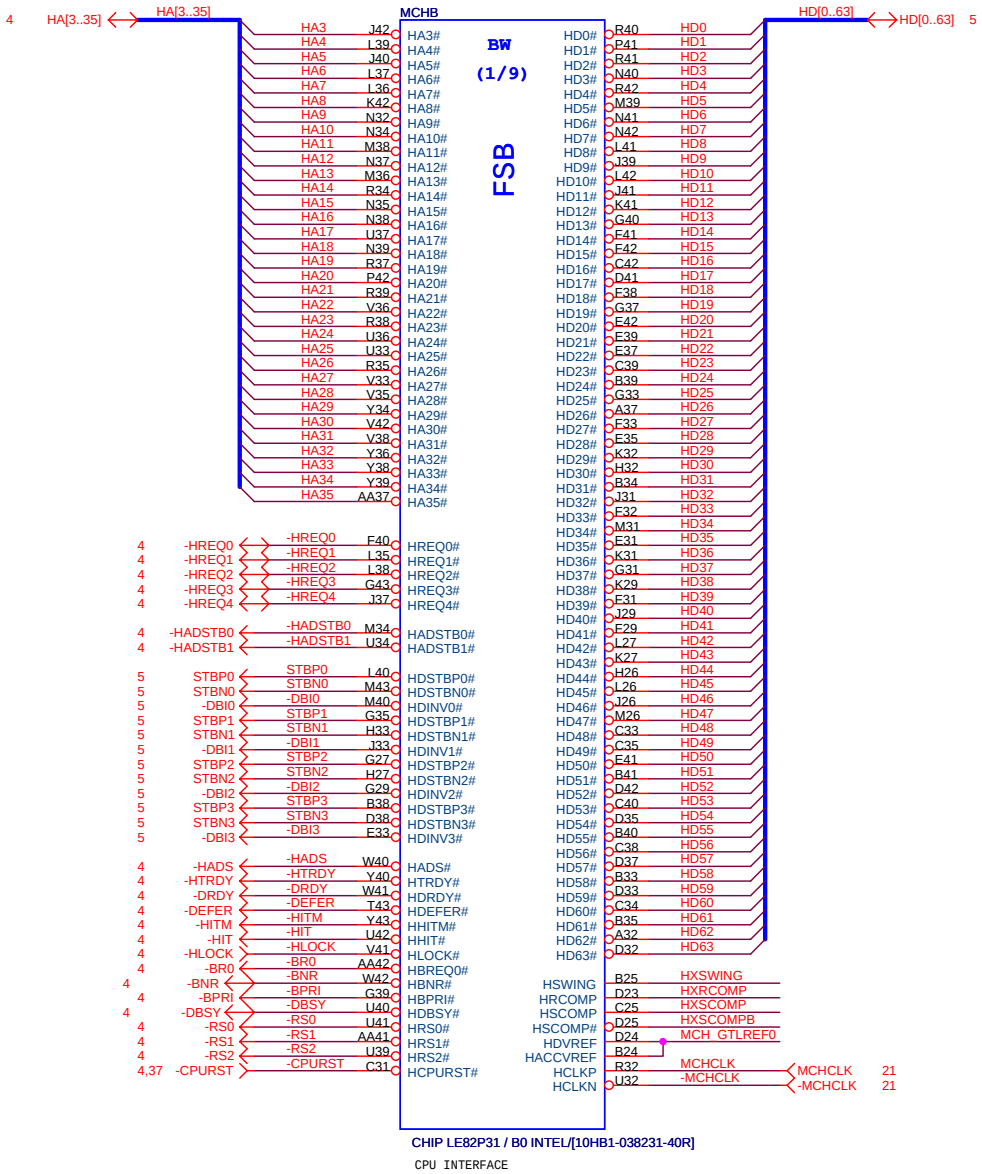


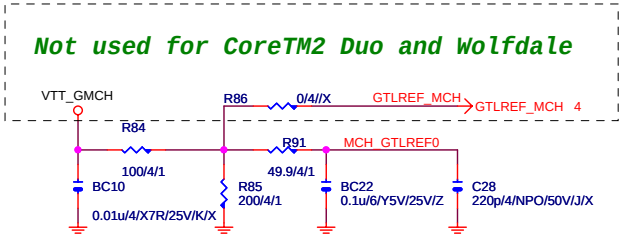
PECI:Platform Environment Control Interface

Gigabyte Technology			
Title: P4_LGA775-C			
Size: B	Document Number: EP31-DS3L		Rev: 1.02
Date: Tuesday, February 26, 2008	Sheet 6 of 40		

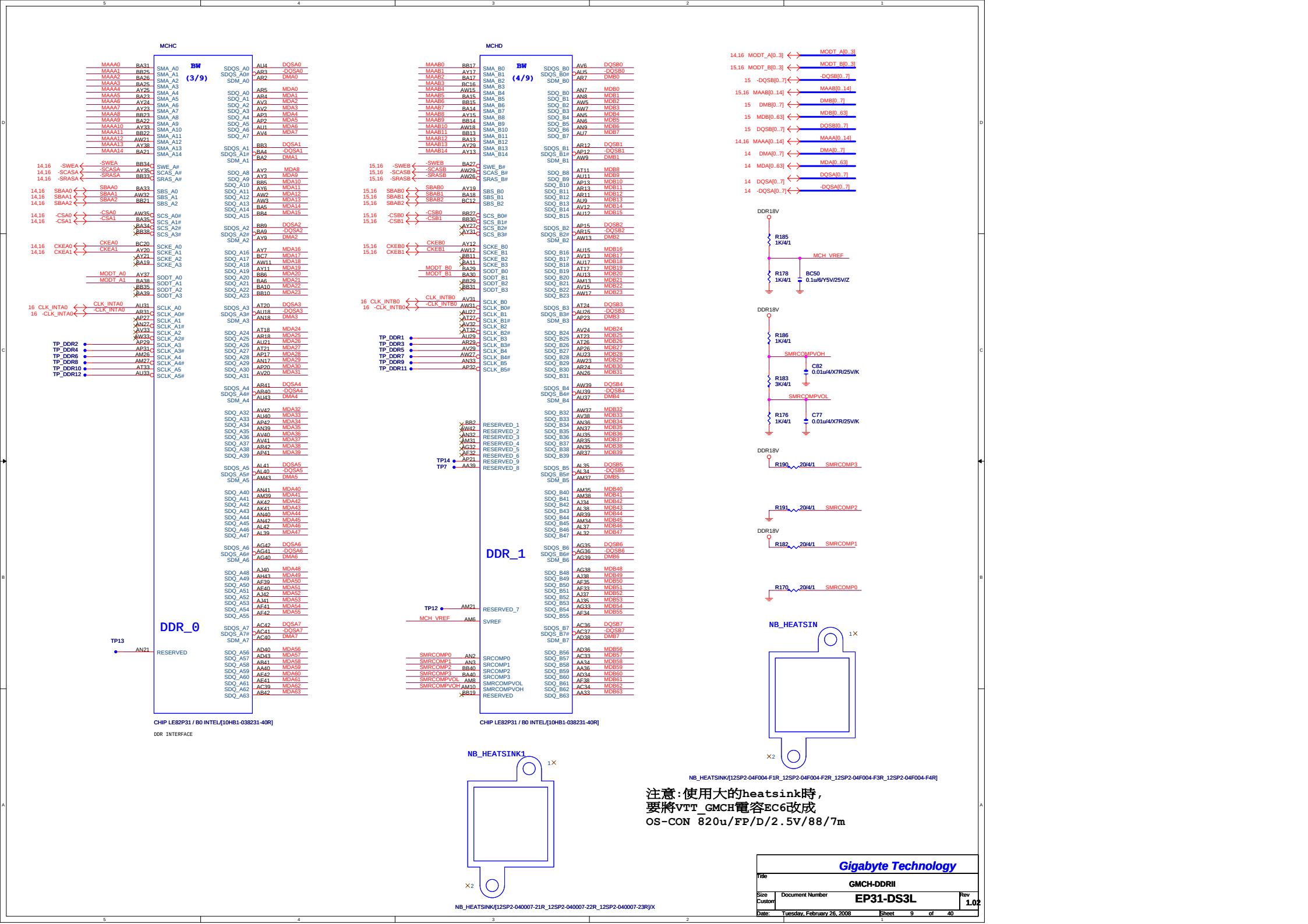


Gigabyte Technology			
Title: P4_LGA775-E,F,G,H			
Size: B	Document Number: EP31-DS3L		Rev: 1.02
Date: Tuesday, February 26, 2008	Sheet 7 of 40		





Gigabyte Technology			
Title: GMCH-HOST			
Size: B	Document Number: EP31-DS3L		Rev: 1.02
Date: Tuesday, February 26, 2008	Sheet 8 of 40		


MCHC
BW
(3/9)
DDR_0
CHIP LE82P31 / B0 INTEL/[10HB1-038231-40R]
DDR INTERFACE
MCHD
BW
(4/9)
DDR_1
CHIP LE82P31 / B0 INTEL/[10HB1-038231-40R]
NB_HEATSINK1
NB_HEATSINK/[12SP2-04F004-F1R_12SP2-04F004-F2R_12SP2-04F004-F3R_12SP2-04F004-F4R]
NB_HEATSINK/[12SP2-040007-21R_12SP2-040007-22R_12SP2-040007-23R]/X
DDR18V
R185 1K/4/1
MCH_VREF
R178 1K/4/1
BC50 0.1u/6/Y5V/25V/Z
R186 1K/4/1
SMRCOMPVOH
C82 0.01u/4/X7R/25V/K
R183 3K/4/1
SMRCOMPVOL
R176 1K/4/1
C77 0.01u/4/X7R/25V/K
R190 20/4/1 SMRCOMP3
R191 20/4/1 SMRCOMP2
R182 20/4/1 SMRCOMP1
R170 20/4/1 SMRCOMP0
NB_HEATSIN
注意:使用大的heatsink時,
要將VTT_GMCH電容EC6改成
OS-CON 820u/FP/D/2.5V/88/7m
Gigabyte Technology
Title
GMCH-DDRII
Size
Custom
Document Number
EP31-DS3L
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1.02
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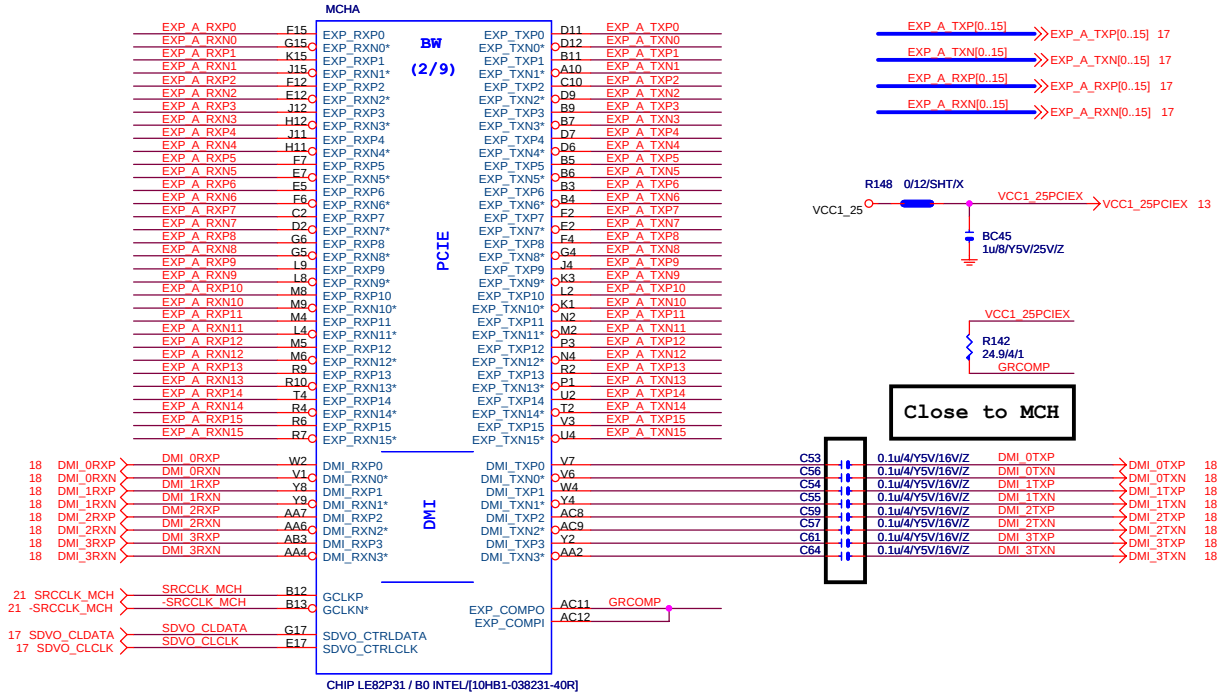
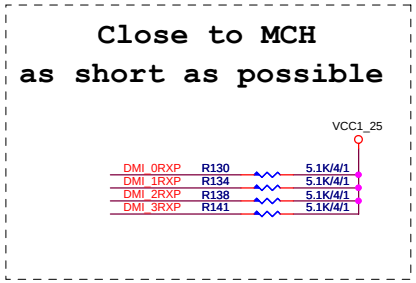
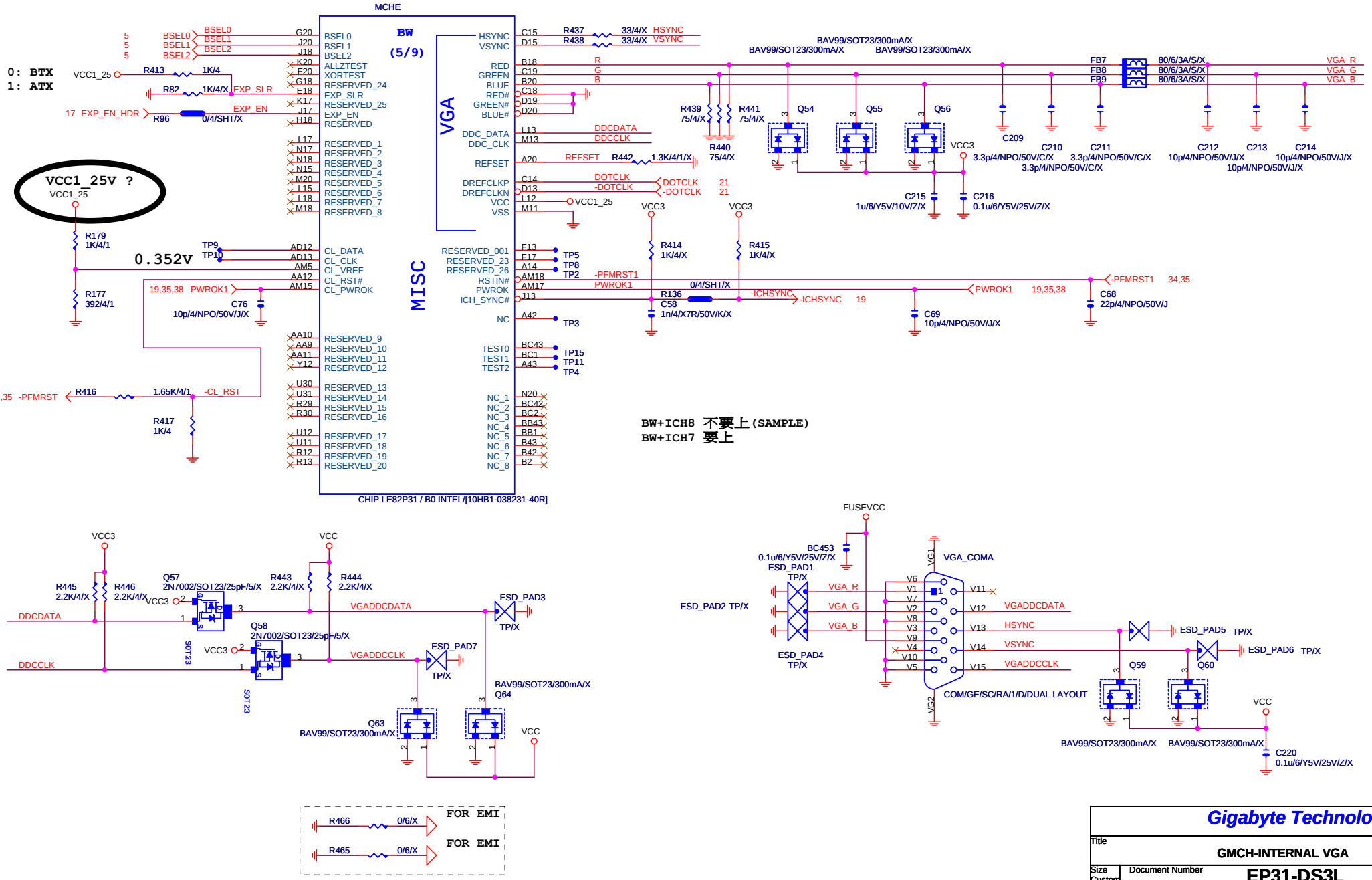
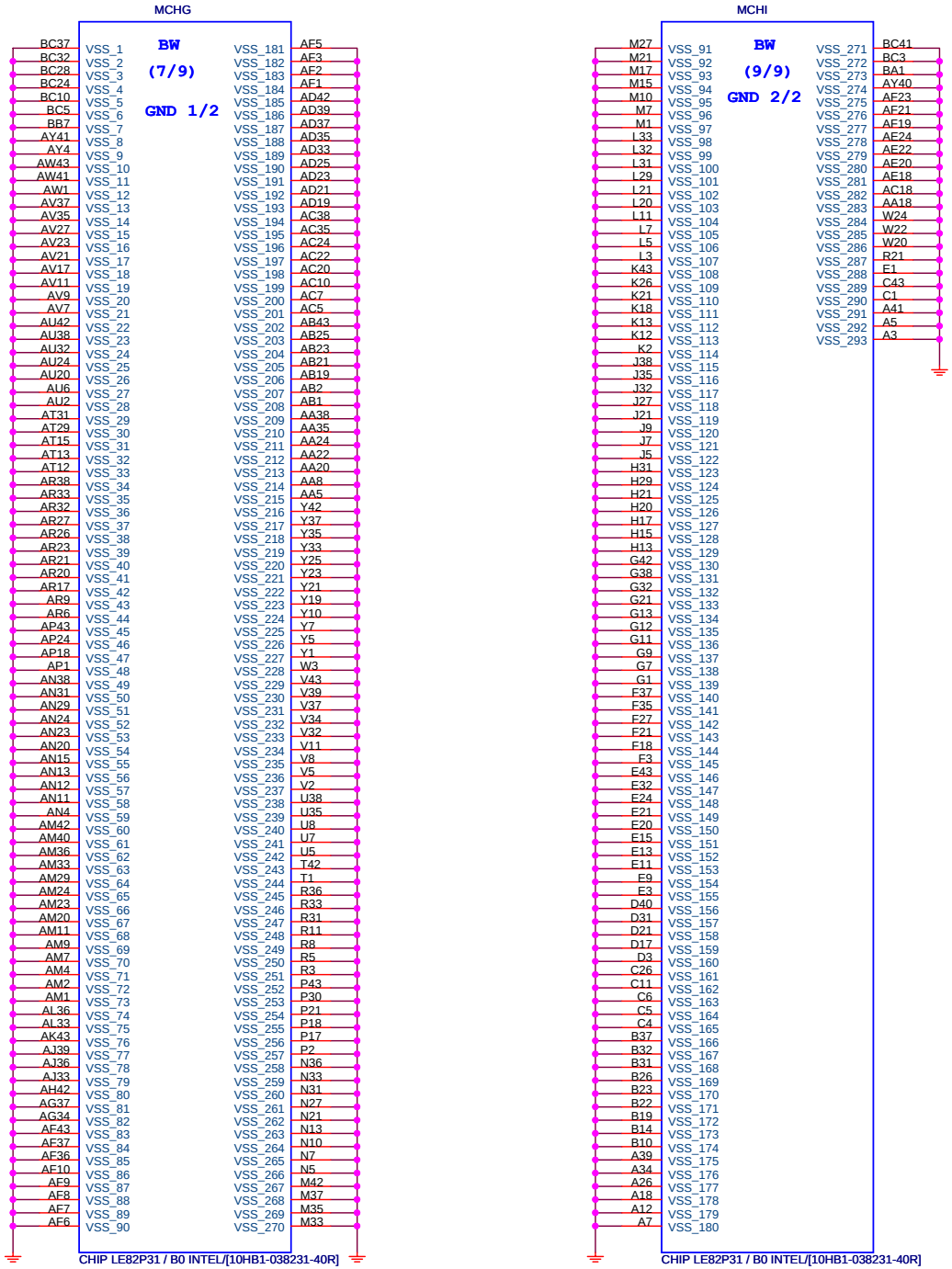




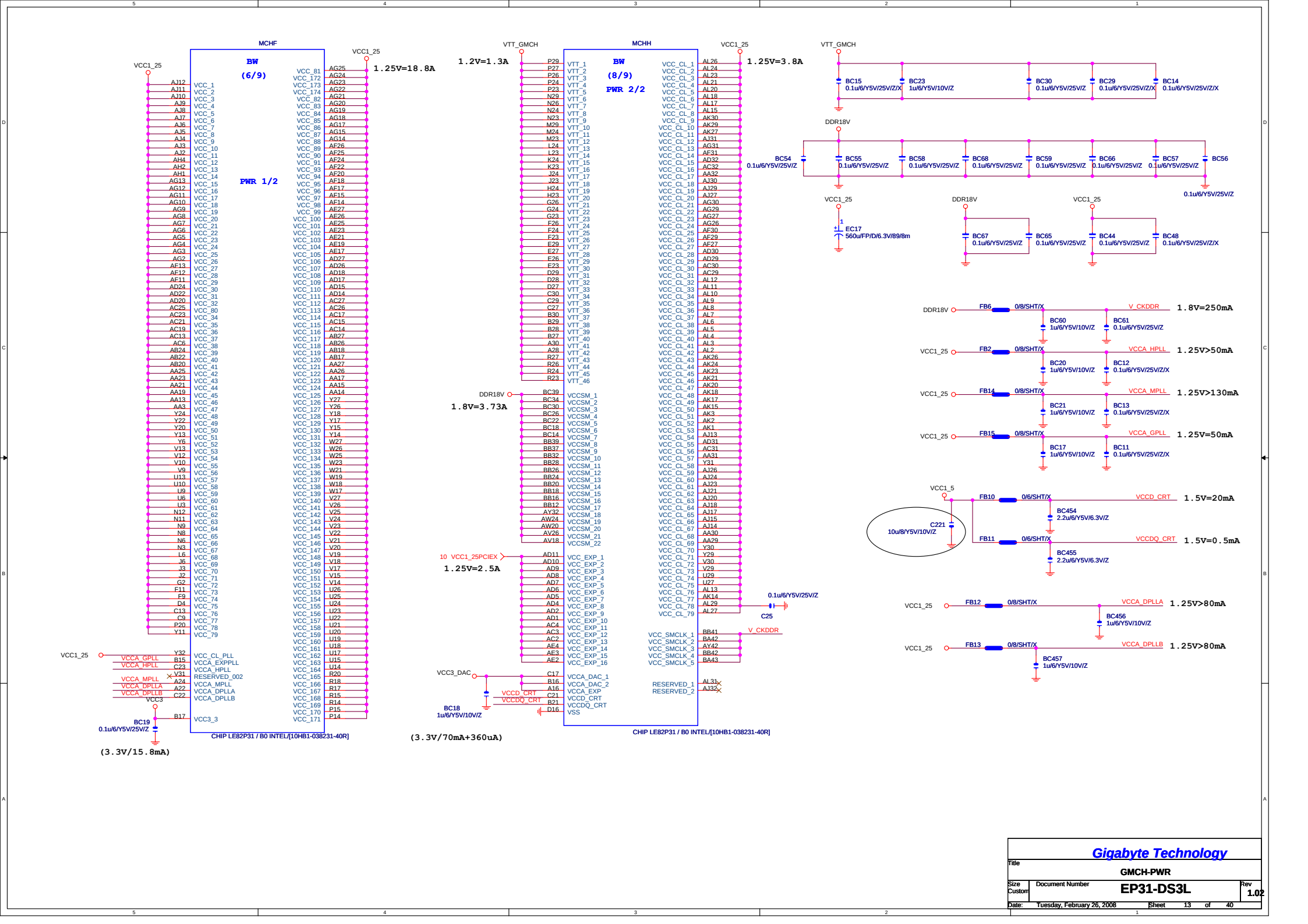
Gigabyte Technology			
Title: GMCH-PCI E & DMI			
Size: Custom	Document Number: EP31-DS3L		Rev: 1.02
Date: Tuesday, February 26, 2008	Sheet 10 of 40		



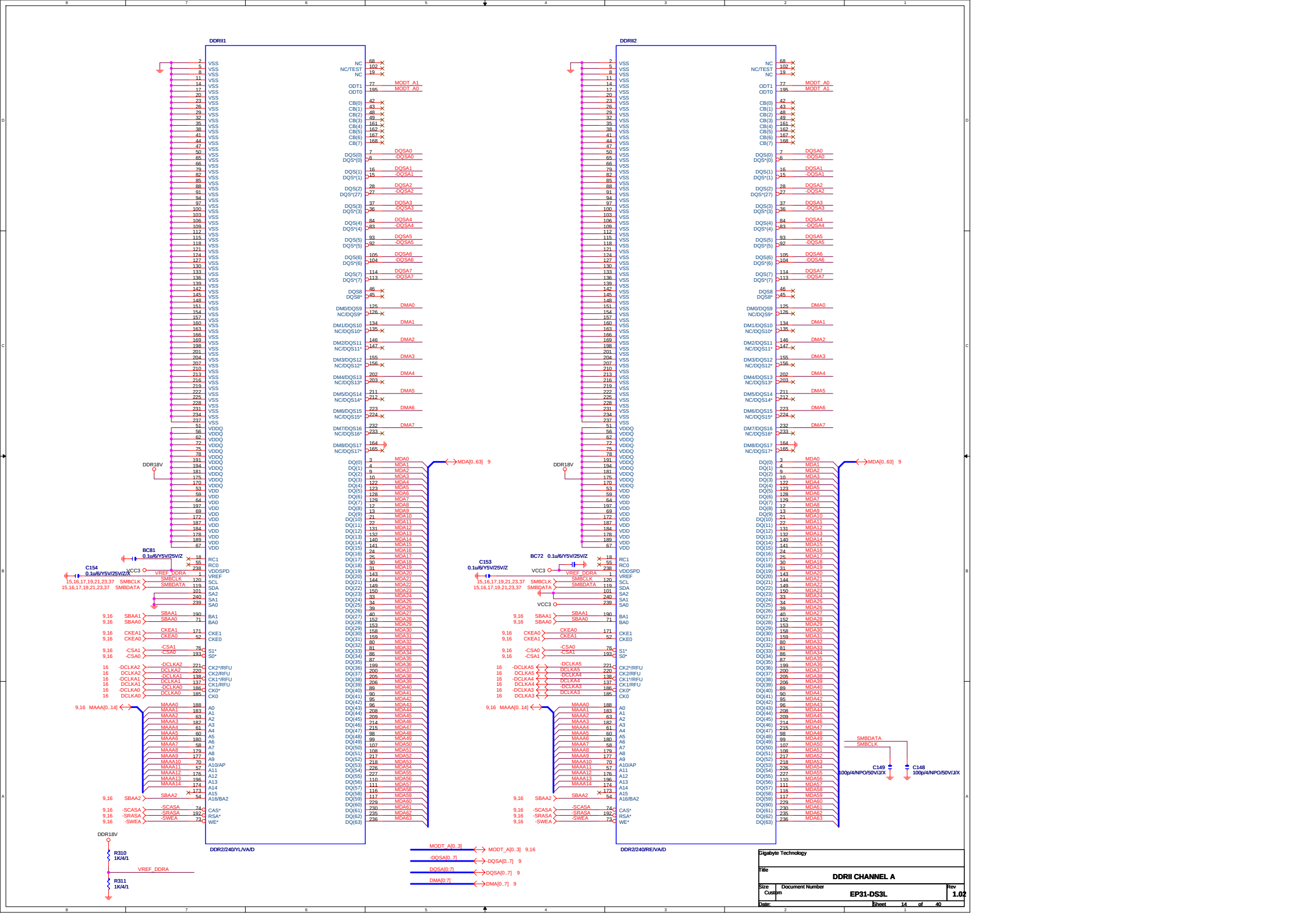
Gigabyte Technology			
Title	GMCH-INTERNAL VGA		
Size: Custom	Document Number: EP31-DS3L		Rev: 1.02
Date: Tuesday, February 26, 2008	Sheet 11 of 40		



Gigabyte Technology		
Title: GMCH-GND		
Size: Custom	Document Number: EP31-DS3L	Rev: 1.02
Date: Tuesday, February 26, 2008	Sheet 12 of 40	



Gigabyte Technology			
Title: GMCH-PWR			
Size: Custom	Document Number: EP31-DS3L		Rev: 1.02
Date: Tuesday, February 26, 2008	Sheet 13 of 40		


DDRII1
DDR2/240/YL/VA/D
DDRII2
DDR2/240/RE/VA/D
DDR18V
VREF_DDRA
R310 1K/4/1
R311 1K/4/1
BC81 0.1u/6/Y5V/25V/Z
BC72 0.1u/6/Y5V/25V/Z
C153 0.1u/6/Y5V/25V/Z
C154 0.1u/6/Y5V/25V/Z
C149 100p/4/NPO/50V/J/X
C148 100p/4/NPO/50V/J/X
SMBDATA
SMBCLK
MODT_A[0..3]
-DQSA[0..7]
DQSA[0..7]
DMA[0..7]
MDA[0..63]
Gigabyte Technology
DDRII CHANNEL A
EP31-DS3L
Custom
1.02
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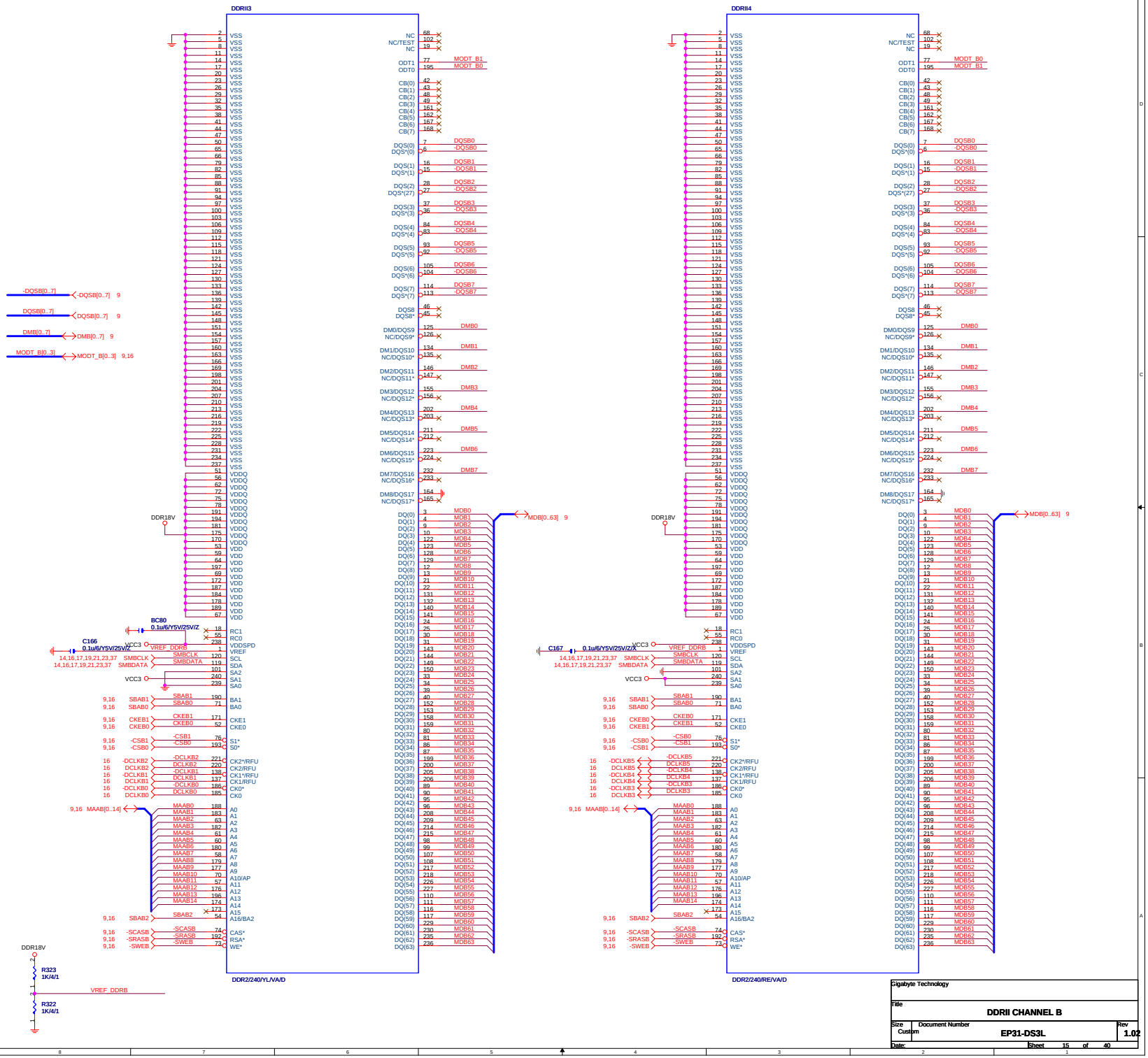

Gigabyte Technology	
Title	DDRII CHANNEL B
Size: Custom	Document Number: EP31-DS3L
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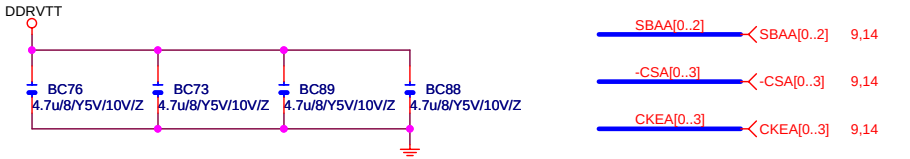
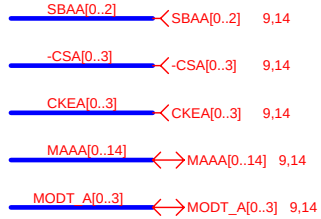
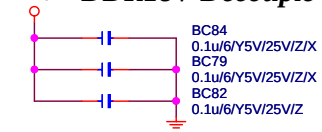
DDR TERMINATION CHANNEL A

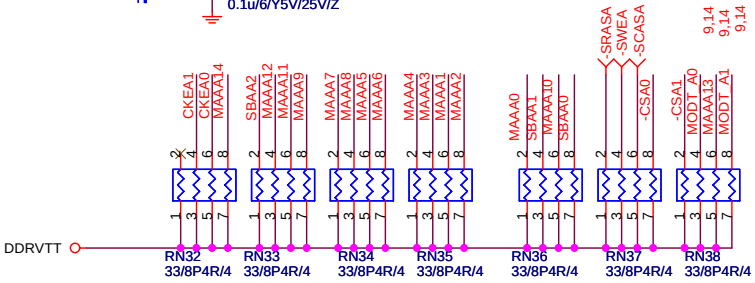
DDRVTT Decouple



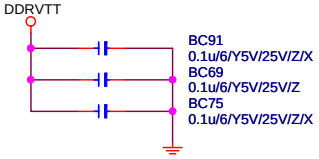


DDR18V Decouple



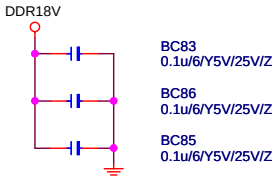


DDRVTT Decouple

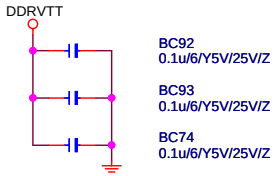


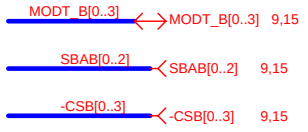
DDR TERMINATION CHANNEL B

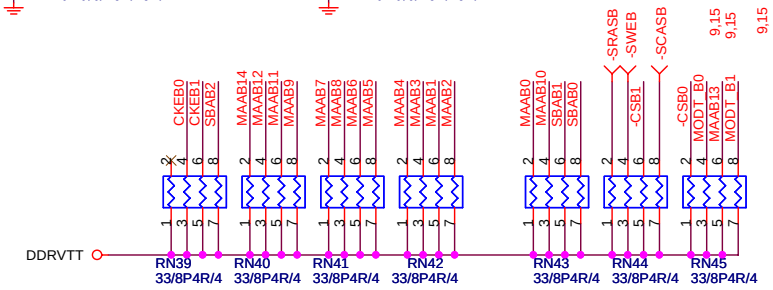
DDR18V Decouple



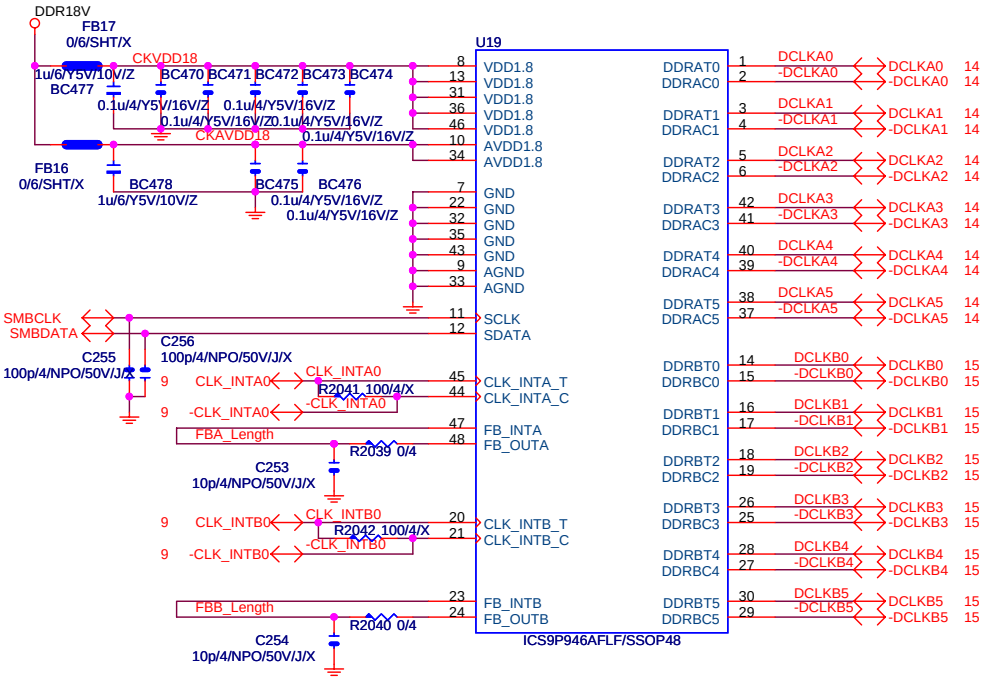
DDRVTT Decouple



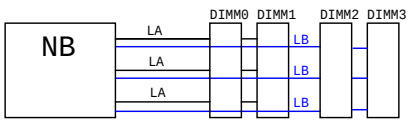


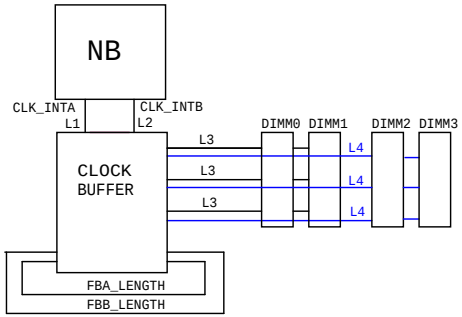


DDR2 CLOCK BUFFER

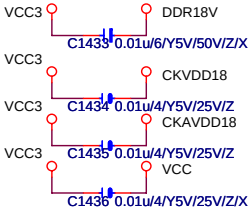


NOTICE
FBA_LENGTH=L1+L3-LA
FBB_LENGTH=L2+L4-LB





FOR EMI



Gigabyte Technology

Title	DDRII CLOCK BUFFER/TERMINATOR		
Size Custom	Document Number EP31-DS3L		Rev 1.02
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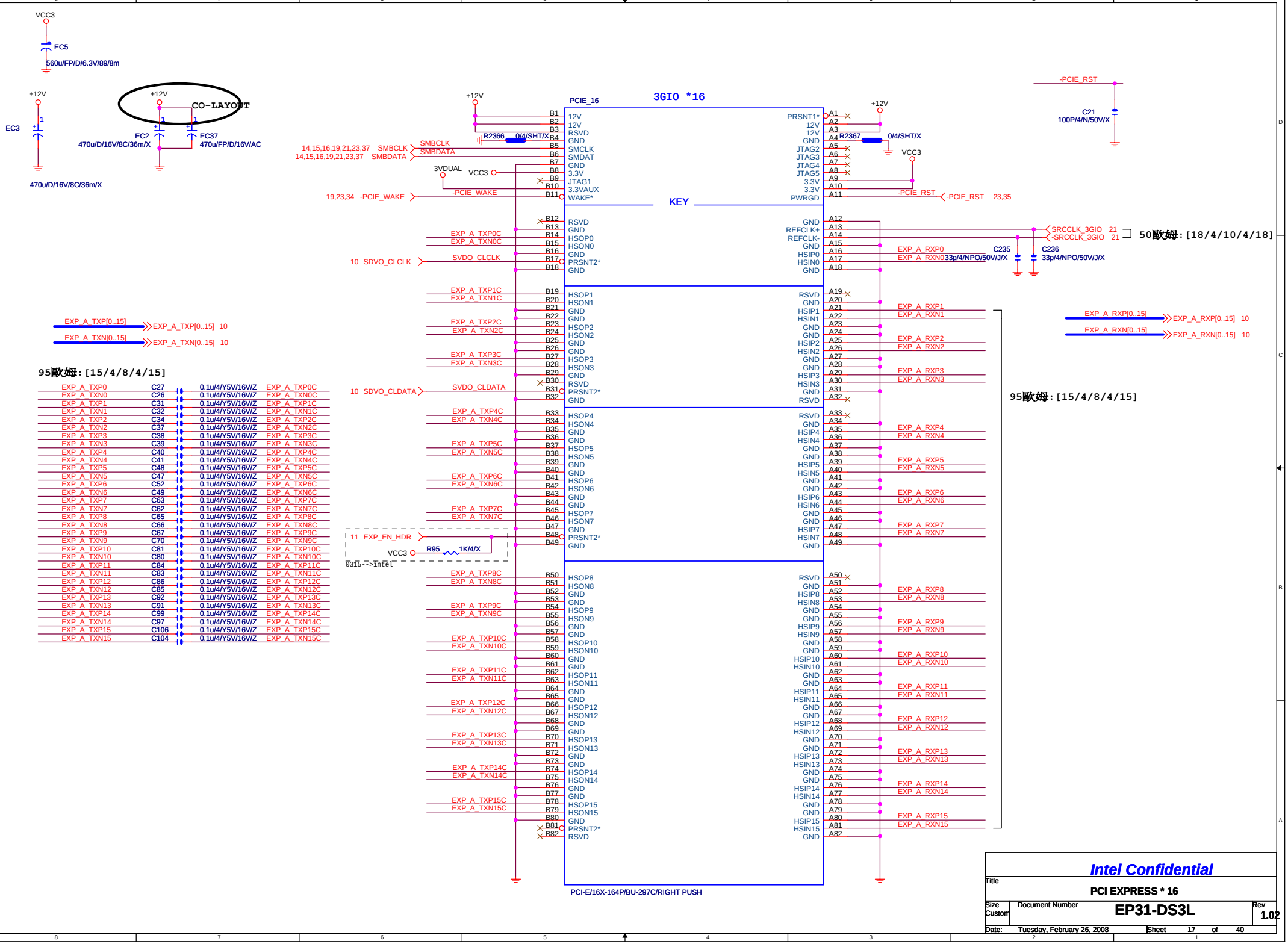
VCC3
EC5
560u/FP/D/6.3V/89/8m
+12V
EC3
470u/D/16V/8C/36m/X
CO-LAYOUT
EC2
470u/D/16V/8C/36m/X
EC37
470u/FP/D/16V/AC
PCIE_16
3GIO_*16
KEY
PCI-E/16X-164P/BU-297C/RIGHT PUSH
R2366 0/4/SHT/X
R2367 0/4/SHT/X
SMBCLK
SMBDATA
3VDUAL
-PCIE_WAKE
SDVO_CLCLK
SDVO_CLDATA
EXP_EN_HDR
R95 1K/4/X
-PCIE_RST
C21 100P/4/N/50V/X
C235 33p/4/NPO/50V/J/X
C236 33p/4/NPO/50V/J/X
SRCCLK_3GIO
-SRCCLK_3GIO
50歐姆:[18/4/10/4/18]
95歐姆:[15/4/8/4/15]
EXP_A_TXP[0..15]
EXP_A_TXN[0..15]
EXP_A_RXP[0..15]
EXP_A_RXN[0..15]
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PCI EXPRESS * 16
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FOR ICH7R POWER ON 瞬間會HIGH 到1.8V 之後0V,必須PULL DOWN 1K/6

H/W RESET

28,35 -RST_BTN

MMBT2222A/SOT23/600mA/40 Q36 S0T23

Q37 MMBT2222A/SOT23/600mA/40 S0T23

19 GPO16 R341 100K/4

R342 1K/4

BC87 1u/6/Y5V/10V/Z

BC90 1U/6/Y/10V/X/X

Close to ICH

as short as possible

DMI_0TXP R132 5.1K/4/X

DMI_1TXP R131 5.1K/4/X

DMI_2TXP R133 5.1K/4/X

DMI_3TXP R137 5.1K/4/X

95歐姆:[12/4/8/4/12]

Close to ICH

R274 5.1K/4/X

R276 5.1K/4/X

R282 5.1K/4/X

R313 5.1K/4/X

90歐姆:[15/4.5/7.5/4.5/15]

95歐姆:[15/4/8/4/15]

ICHA

ICH7/A1/QJ01(NH82801GB)/[10HB1-032801-N2R]

ICHB

ICH7/A1/QJ01(NH82801GB)/[10HB1-032801-N2R]

10HB1-032801-M1 REV:NON

C111 100P/4/N/50V/X

C201 10P/4/N/50V/X

C200 10P/4/N/50V/X

R240 22/4

R260 24.9/4/1

R262 22.6/4/1

	GNT4#	GNT5#
SPI=	1	0
PCI=	0	1
LPC=	1	1

PCI_BT2

JP/1*2/BU/OH/O::[1-2]CLOSE/X

PCI_BT1 -GNT4 R219 1K/4/X

PH/1*2/BK/2.54/VA/D/X

PCI_BT2 -GNT5 R233 1K/4 R226 1K/4/X

PH/1*2/BK/2.54/VA/D/X

SB_HEATSIN

SB_HEATSIN/[12SP2-030010-B1R_12SP2-030010-B2R_12SP2-030010-B3R_12SP2-030010-B4R]

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Title	ICH6-PCI, DMI, LAN, USB	
Size B	Document Number EP31-DS3L	Rev 1.02
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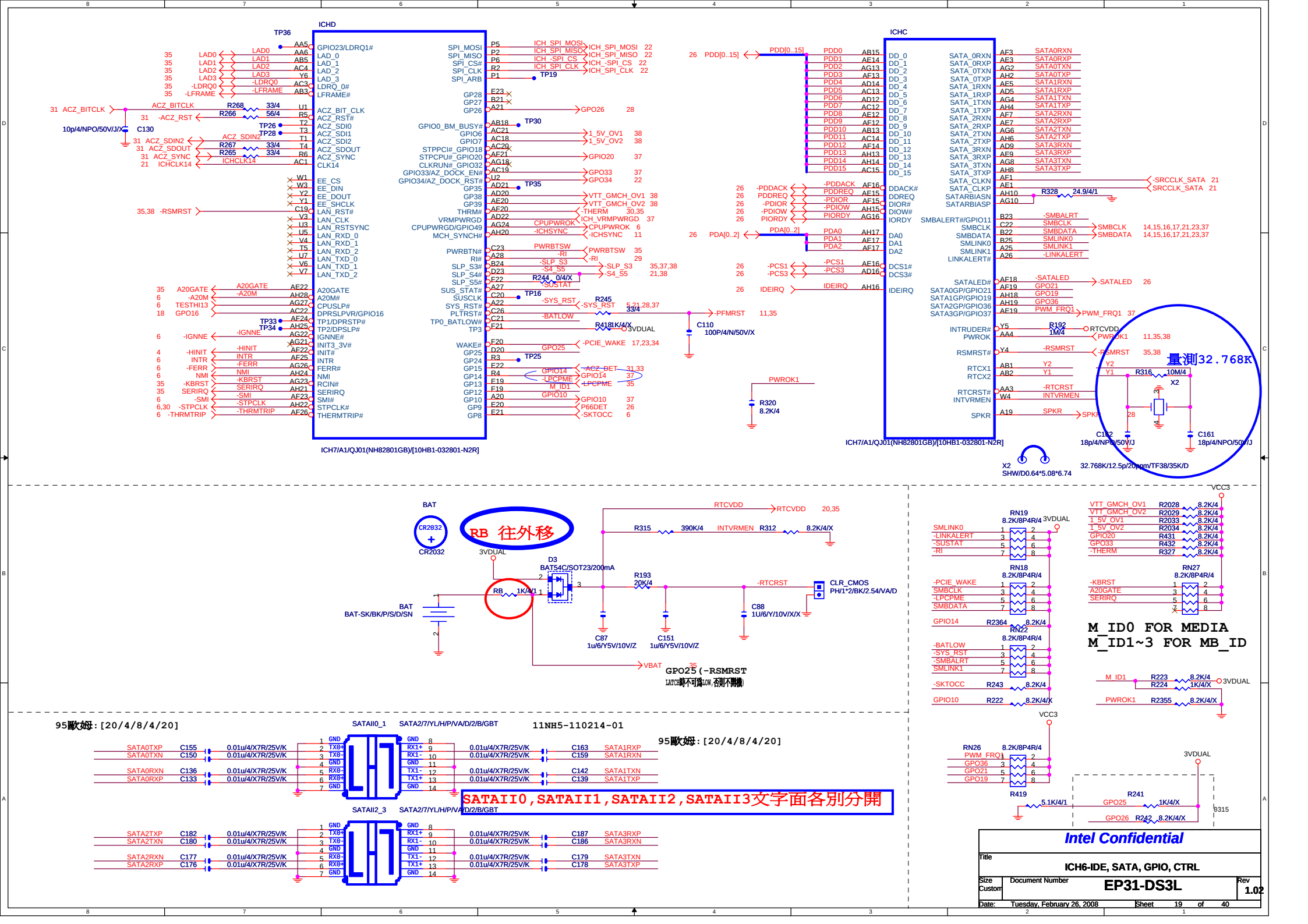
ICHD
ICH7/A1/QJ01(NH82801GB)/[10HB1-032801-N2R]
ICHC
ICH7/A1/QJ01(NH82801GB)/[10HB1-032801-N2R]
量測32.768K
X2
SHW/D0.64*5.08*6.74
32.768K/12.5p/20ppm/TF38/35K/D
BAT
CR2032
RB 往外移
D3
BAT54C/SOT23/200mA
CLR_CMOS
PH/1*2/BK/2.54/V/A/D
BAT-SK/BK/P/S/D/SN
GPO25(-RSMRST
LATCH時不可當LOW,否則不開機)
M_ID0 FOR MEDIA
M_ID1~3 FOR MB_ID
95歐姆:[20/4/8/4/20]
SATAII0_1
SATA2/7/YL/H/P/VA/D/2/B/GBT
11NH5-110214-01
SATAII2_3
SATAII0,SATAII1,SATAII2,SATAII3文字面各別分開
Intel Confidential
ICH6-IDE, SATA, GPIO, CTRL
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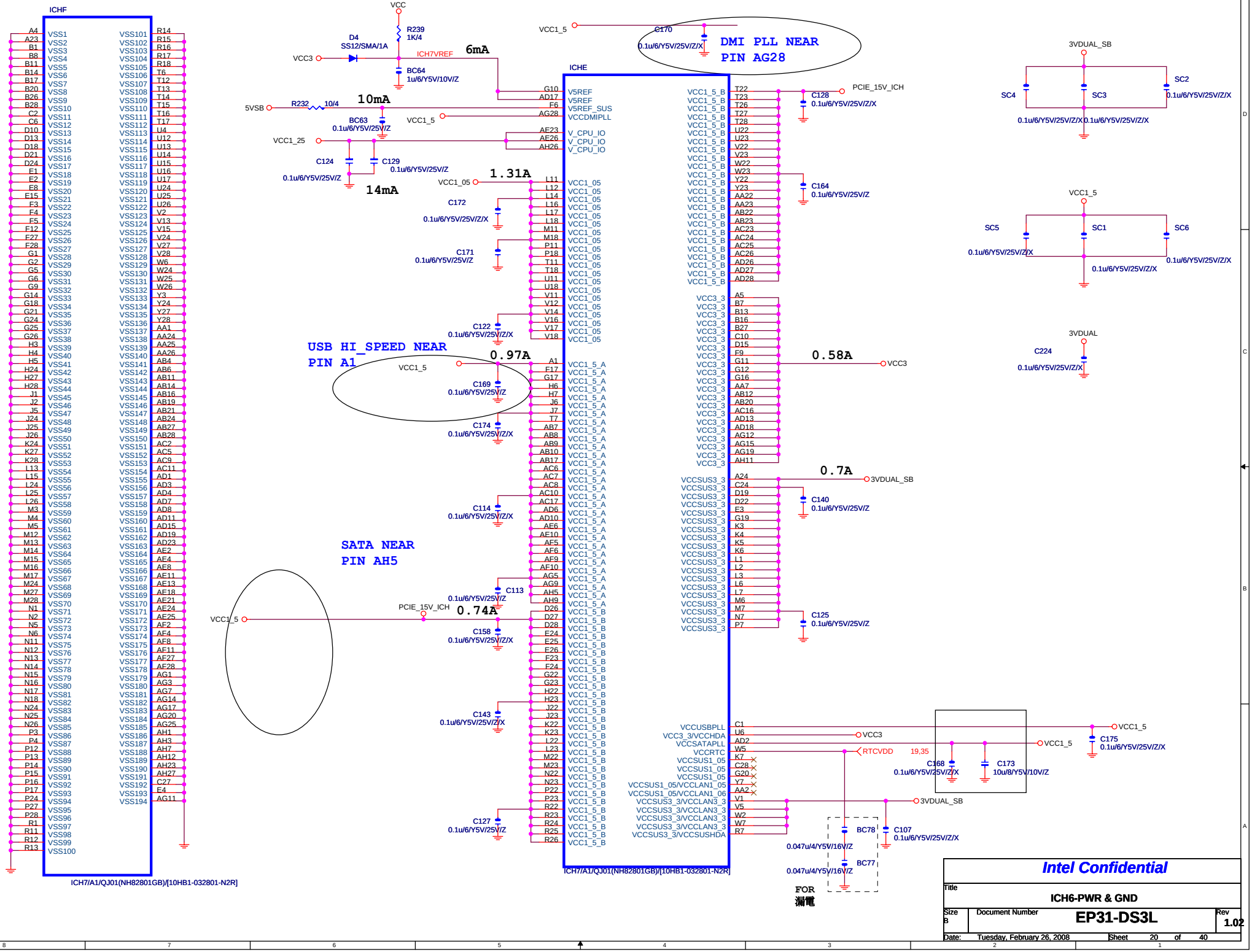
ICHF
ICHE
VCC
D4
SS12/SMA/1A
R239
1K/4
VCC3
ICH7VREF
6mA
BC64
1u/6/Y5V/10V/Z
5VSB
R232
10/4
10mA
BC63
0.1u/6/Y5V/25V/Z
VCC1_25
C124
0.1u/6/Y5V/25V/Z
C129
0.1u/6/Y5V/25V/Z
14mA
VCC1_5
1.31A
C172
0.1u/6/Y5V/25V/Z/X
C171
0.1u/6/Y5V/25V/Z
C122
0.1u/6/Y5V/25V/Z/X
USB HI_SPEED NEAR
PIN A1
0.97A
C169
0.1u/6/Y5V/25V/Z
C174
0.1u/6/Y5V/25V/Z/X
C114
0.1u/6/Y5V/25V/Z/X
SATA NEAR
PIN AH5
C113
0.1u/6/Y5V/25V/Z
PCIE_15V_ICH
0.74A
C158
0.1u/6/Y5V/25V/Z/X
C143
0.1u/6/Y5V/25V/Z/X
C127
0.1u/6/Y5V/25V/Z
C170
0.1u/6/Y5V/25V/Z/X
DMI PLL NEAR
PIN AG28
PCIE_15V_ICH
C128
0.1u/6/Y5V/25V/Z/X
C164
0.1u/6/Y5V/25V/Z
0.58A
VCC3
0.7A
3VDUAL_SB
C140
0.1u/6/Y5V/25V/Z
C125
0.1u/6/Y5V/25V/Z
RTCVDD
19,35
C168
0.1u/6/Y5V/25V/Z/X
C173
10u/8/Y5V/10V/Z
C175
0.1u/6/Y5V/25V/Z/X
BC78
0.047u/4/Y5V/16V/Z
BC77
0.047u/4/Y5V/16V/Z
C107
0.1u/6/Y5V/25V/Z/X
FOR
漏電
3VDUAL_SB
SC2
SC4
SC3
0.1u/6/Y5V/25V/Z/X
0.1u/6/Y5V/25V/Z/X
0.1u/6/Y5V/25V/Z/X
VCC1_5
SC5
SC1
SC6
0.1u/6/Y5V/25V/Z/X
0.1u/6/Y5V/25V/Z/X
0.1u/6/Y5V/25V/Z/X
3VDUAL
C224
0.1u/6/Y5V/25V/Z/X
ICH7/A1/QJ01(NH82801GB)/[10HB1-032801-N2R]
ICH7/A1/QJ01(NH82801GB)/[10HB1-032801-N2R]
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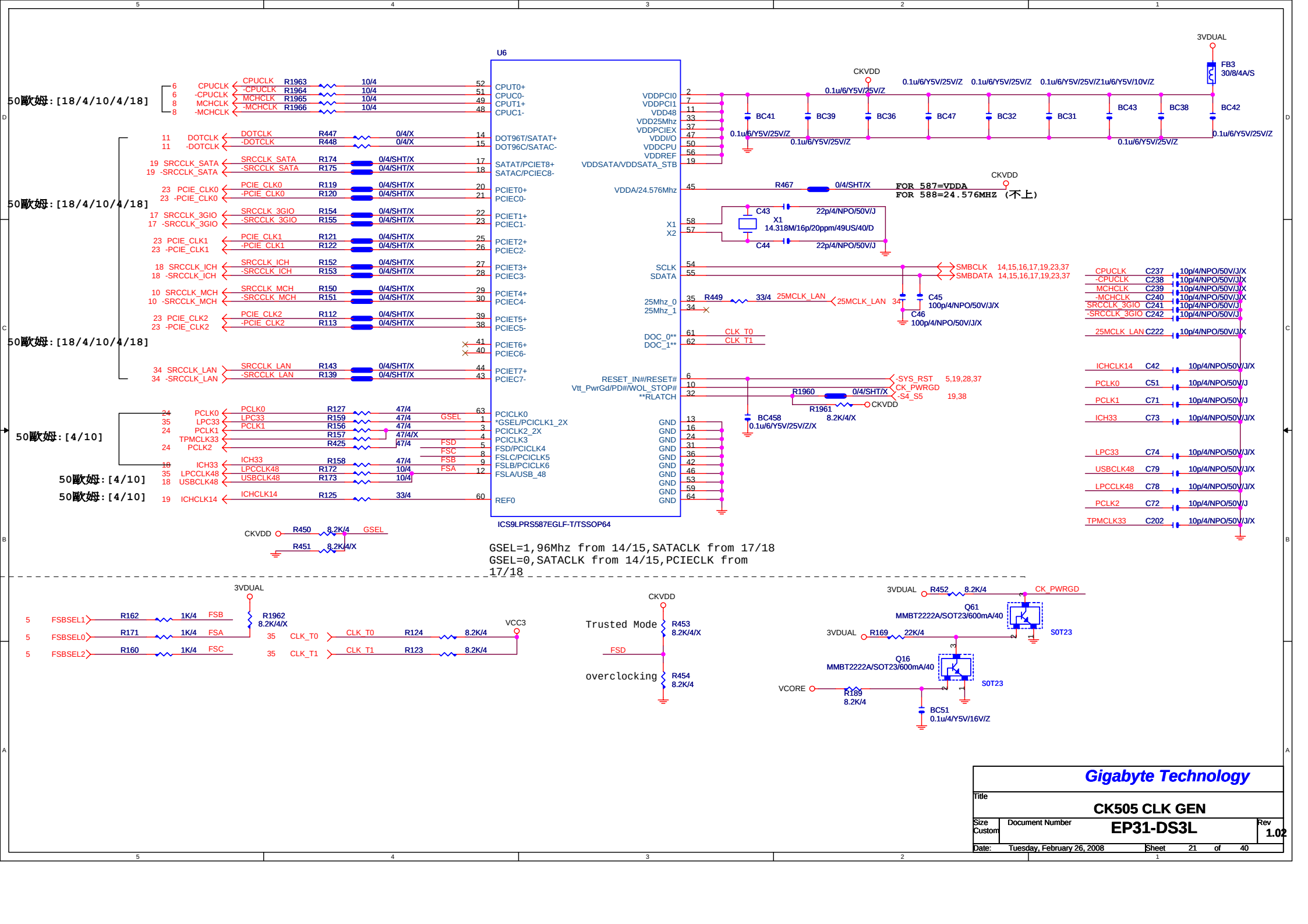

Gigabyte Technology

Title: CK505 CLK GEN

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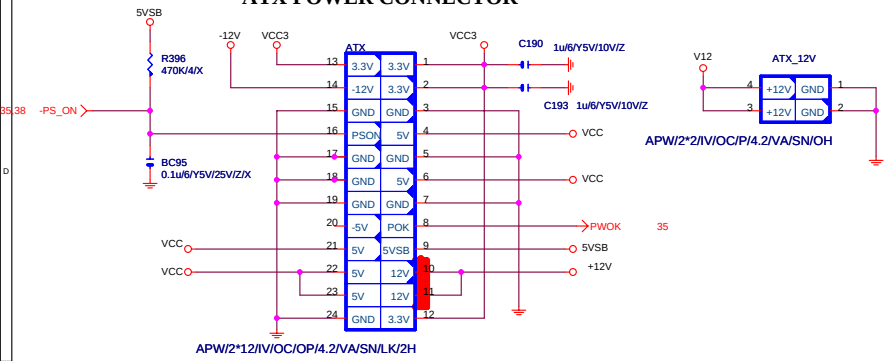
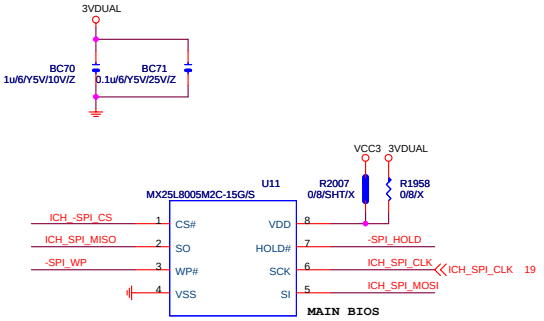
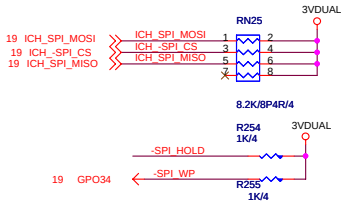
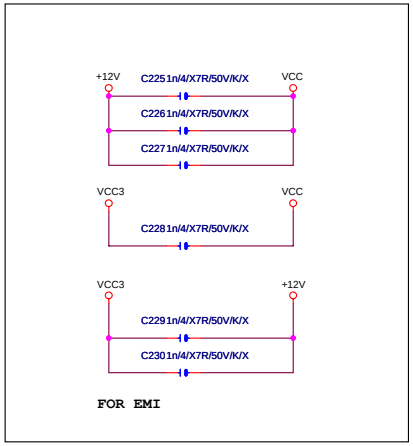
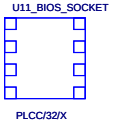
ATX POWER CONNECTOR











GIGABYTE

Title: ATX POWER CONNECTOR, BIOS			
Size: Custom	Document Number: EP31-DS3L		Rev: 1.02
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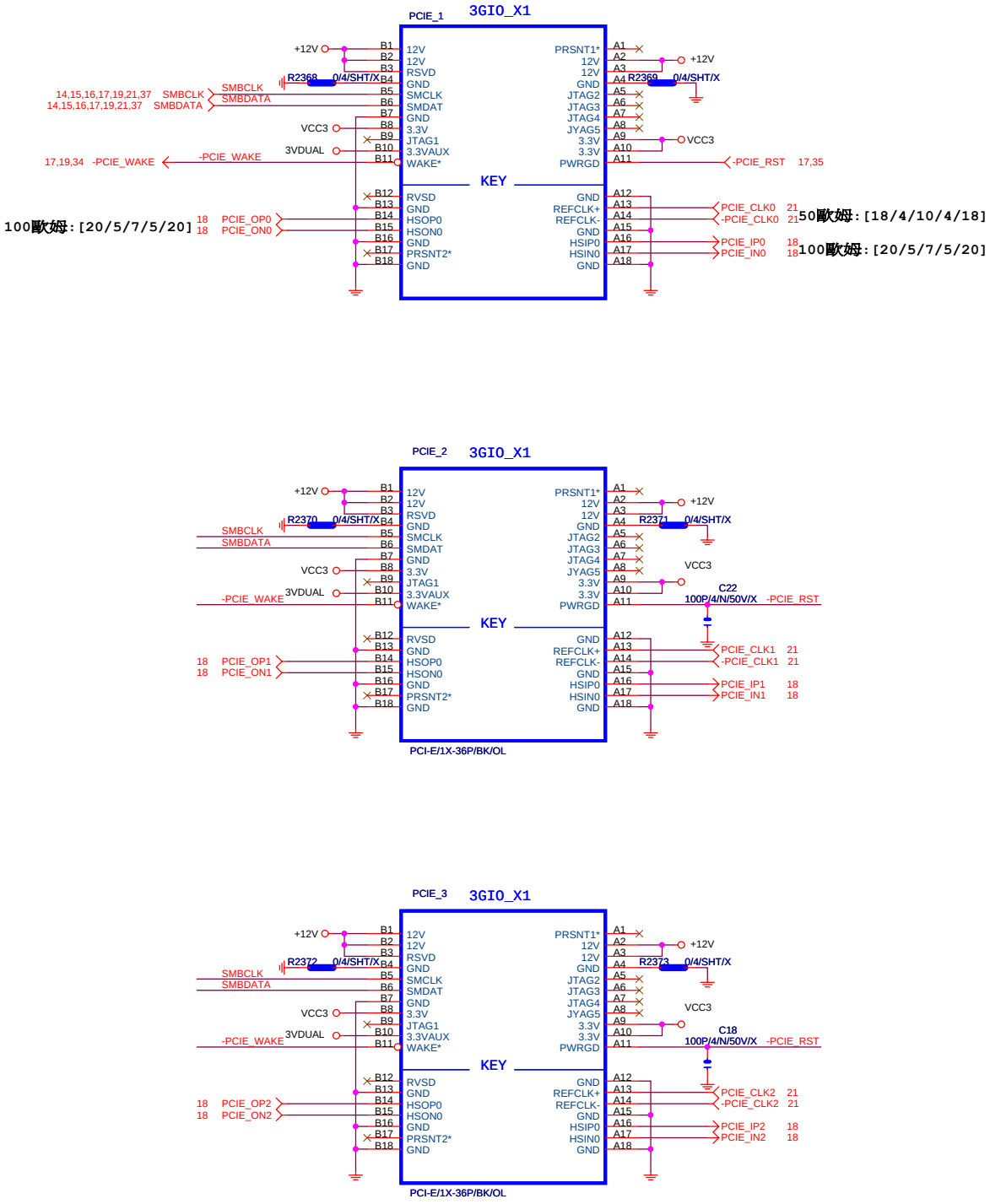

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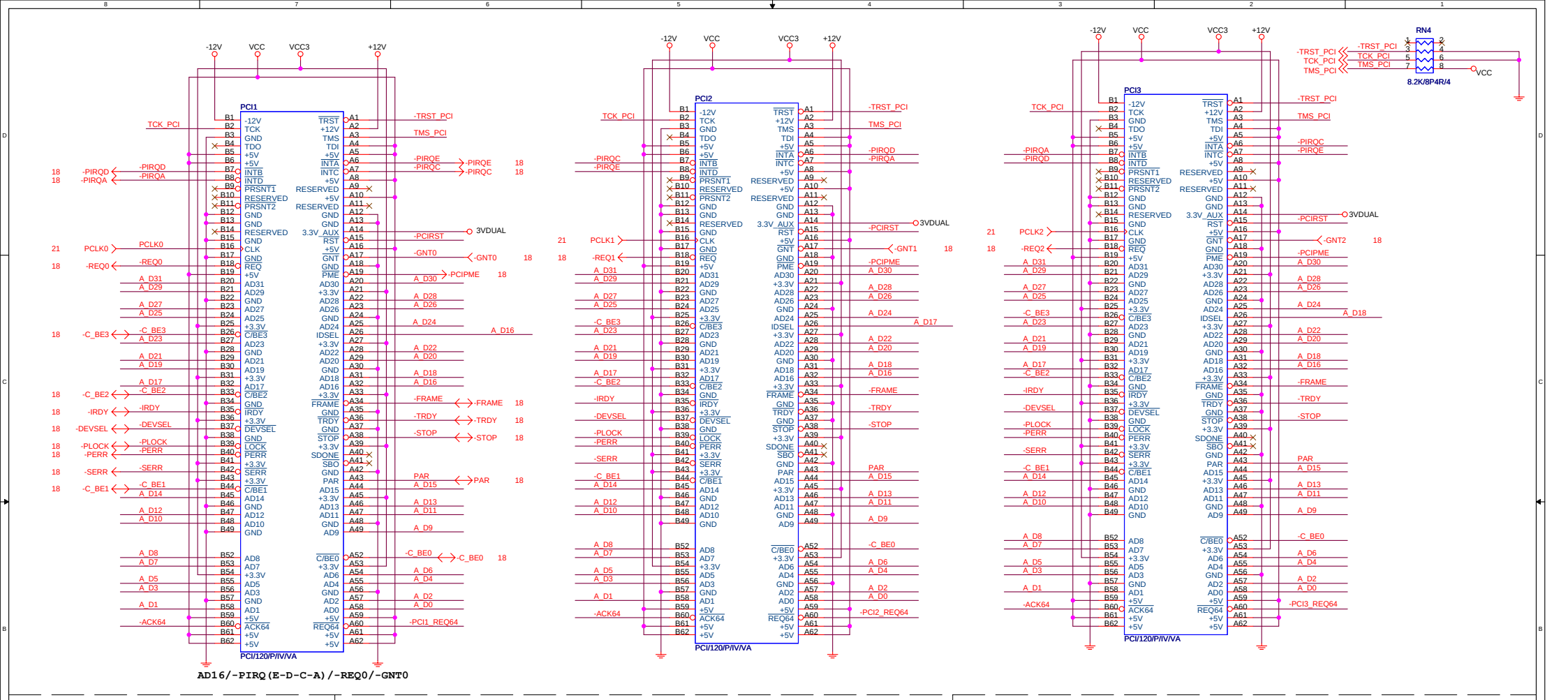
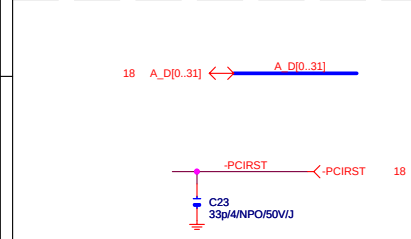
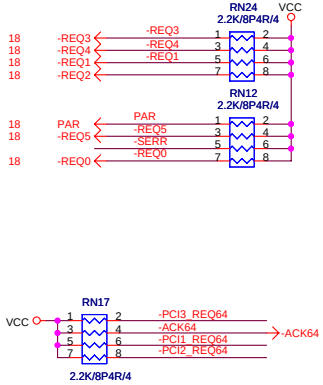
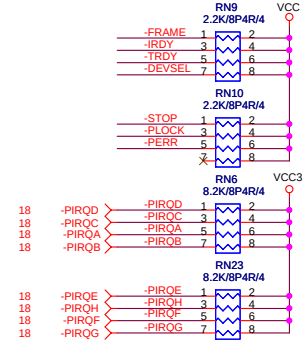
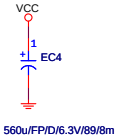
Title	PCI E SLOT 1, 2, 3	
Size: B	Document Number: EP31-DS3L	Rev: 1.02
Date: Tuesday, February 26, 2008	Sheet 23 of 40	

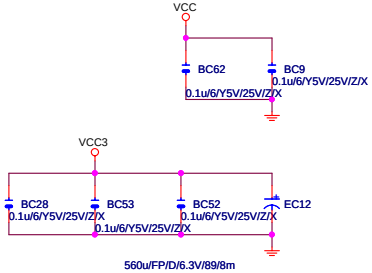












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Title	PCI SLOT 1, 2		
Size: Custom	Document Number: EP31-DS3L		Rev: 1.02
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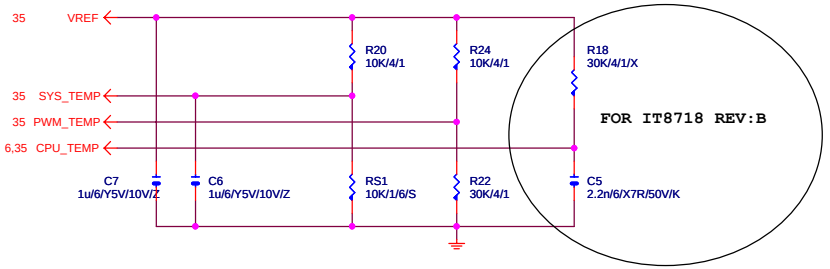
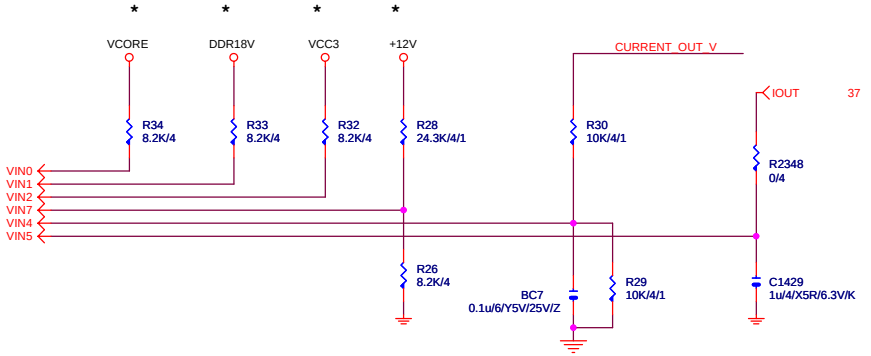
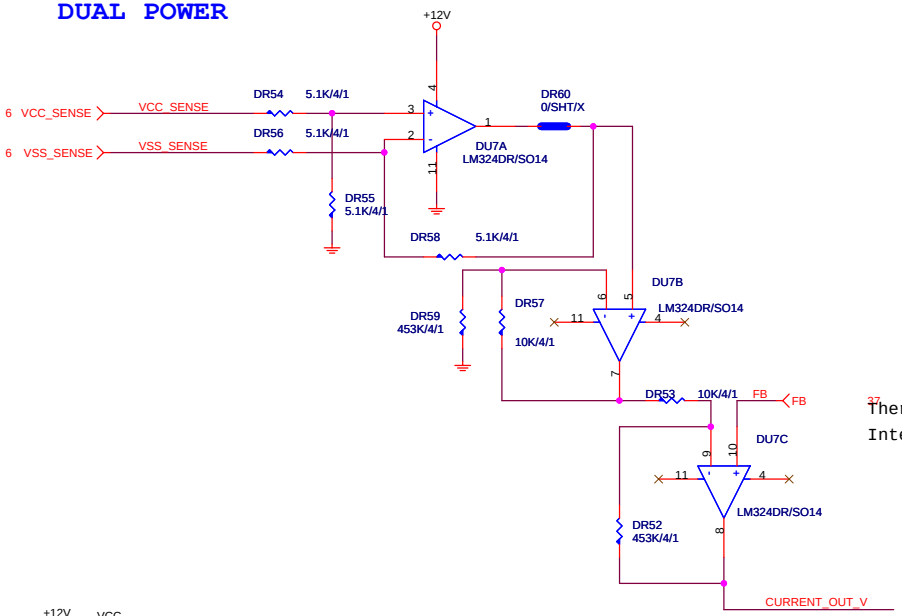
TEMP. SENSE



VOLTAGE SENSE



DUAL POWER



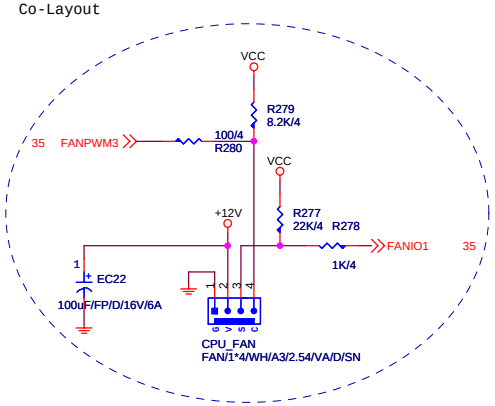
CPU/SYS FAN

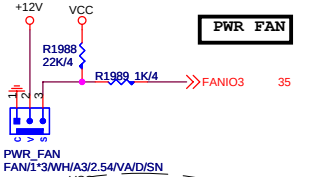
If use PBSS5240 1pcs : (non airflow)	If use PBSS5240 1pcs : (with airflow)
CPUFAN_VCC=12V: Temp=40 deg	CPUFAN_VCC=12V: Temp=33 deg
CPUFAN_VCC=11V: Temp=82 deg	CPUFAN_VCC=11V: Temp=62 deg
CPUFAN_VCC=10V: Temp=70 deg	CPUFAN_VCC=10V: Temp=86 deg
CPUFAN_VCC= 9V: Temp=110 deg	CPUFAN_VCC= 9V: Temp=117 deg
CPUFAN_VCC= 8V: Temp>200 deg	CPUFAN_VCC= 8V: Temp>122 deg

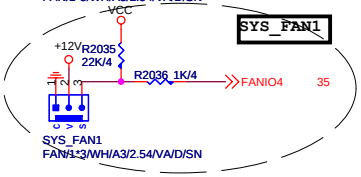
+12V不需預留330uF電容

ThermalTake FAN Power Consumption: 0.82A
Intel FAN Power Consumption Spec: 1.1A

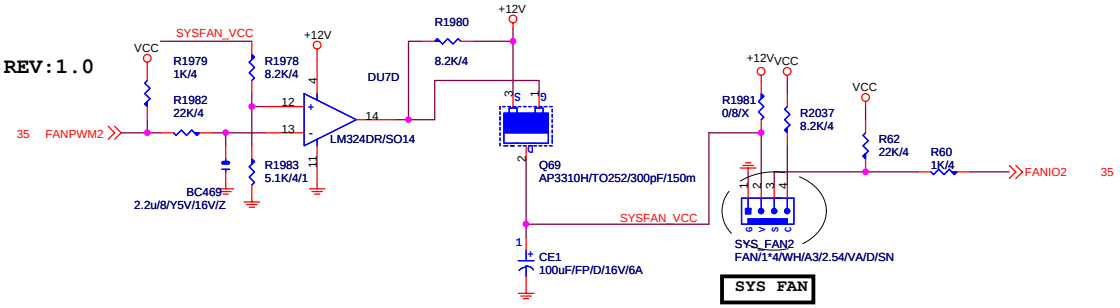
T0252 & SOT23
Co-Layout







REV:1.0



SYS FAN

GIGABYTE

Title	HWM/FAN/CI	
Size: Custom	Document Number: EP31-DS3L	Rev: 1.02
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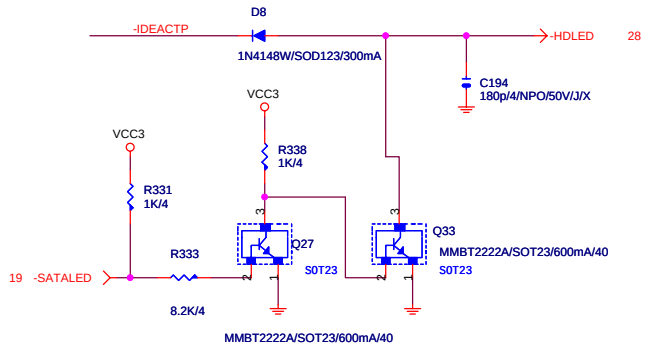
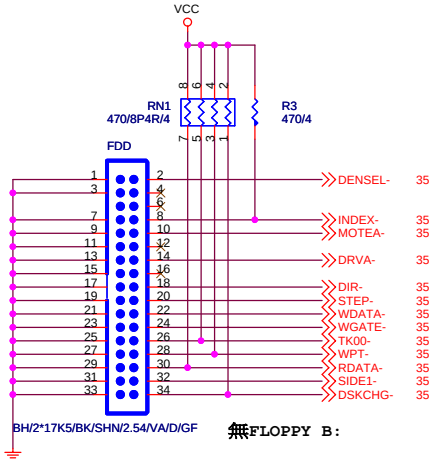
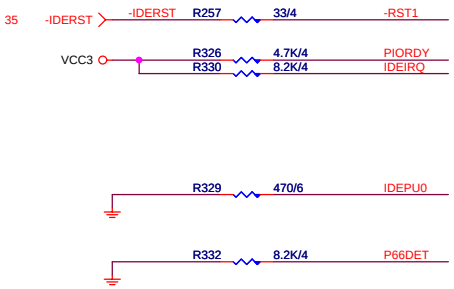
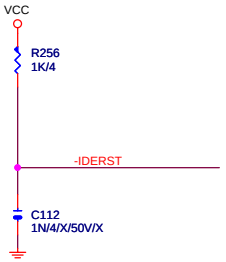


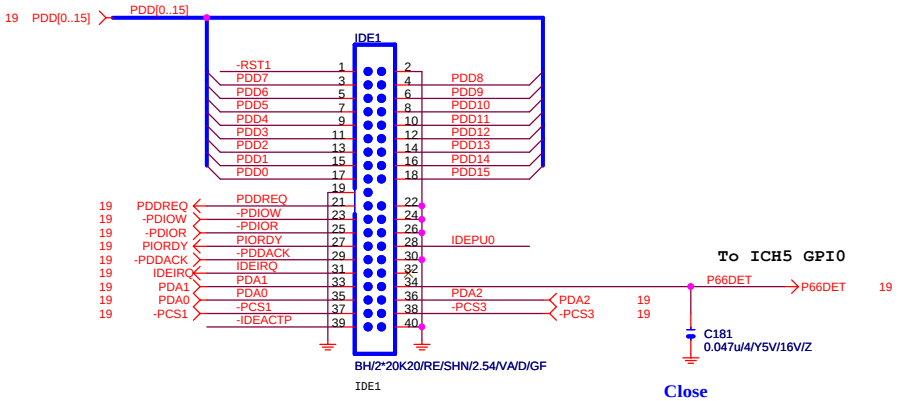


無FLOPPY B:





Default 不上,由IT8712 OUTPUT,REV0.2 驗證



Close to connector

PRIMARY IDE CONNECTOR

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Title: IDE / FLOPPY			
Size: B	Document Number: EP31-DS3L		Rev: 1.02
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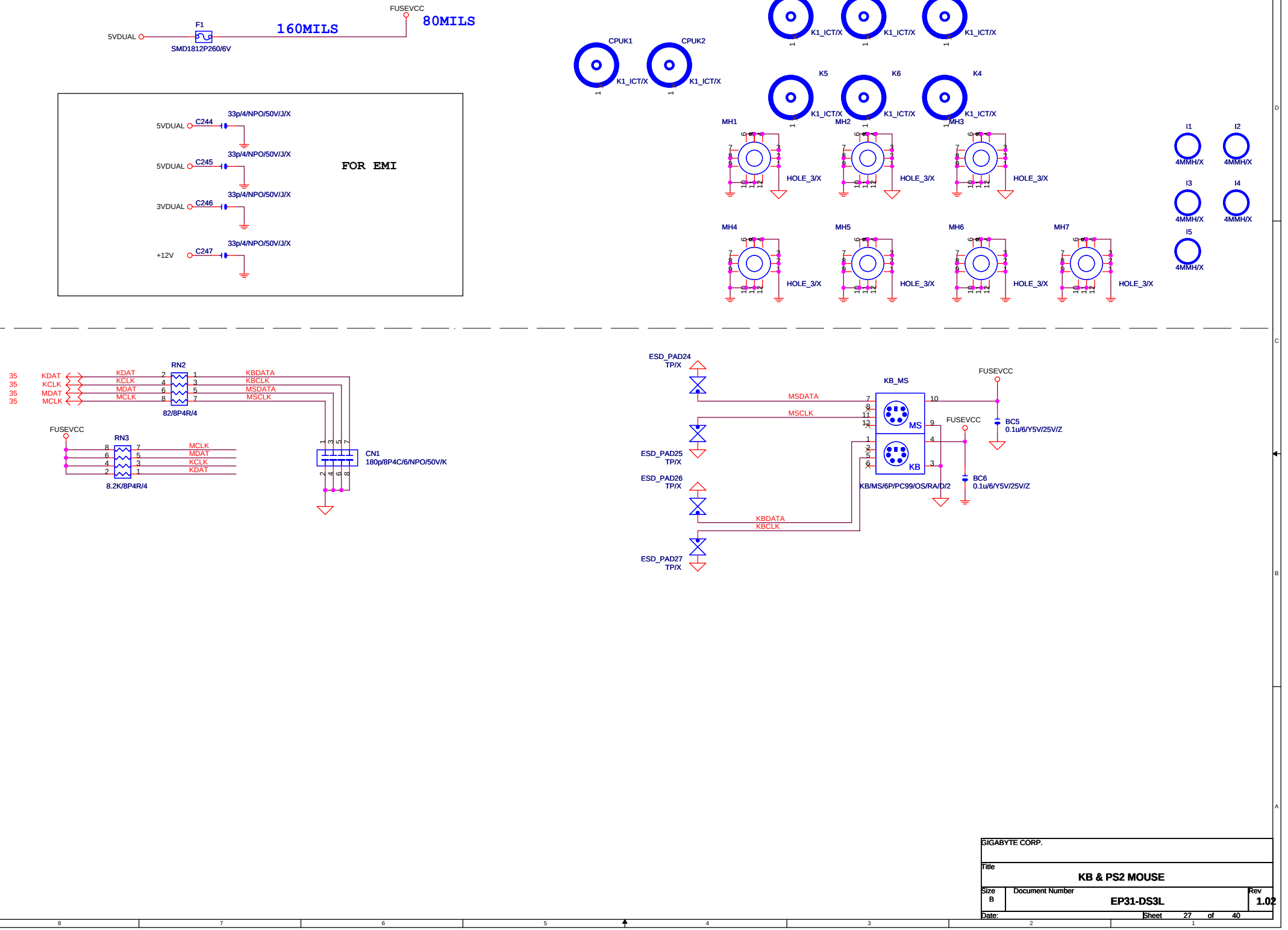

GIGABYTE CORP.		
Title: KB & PS2 MOUSE		
Size: B	Document Number: EP31-DS3L	Rev: 1.02
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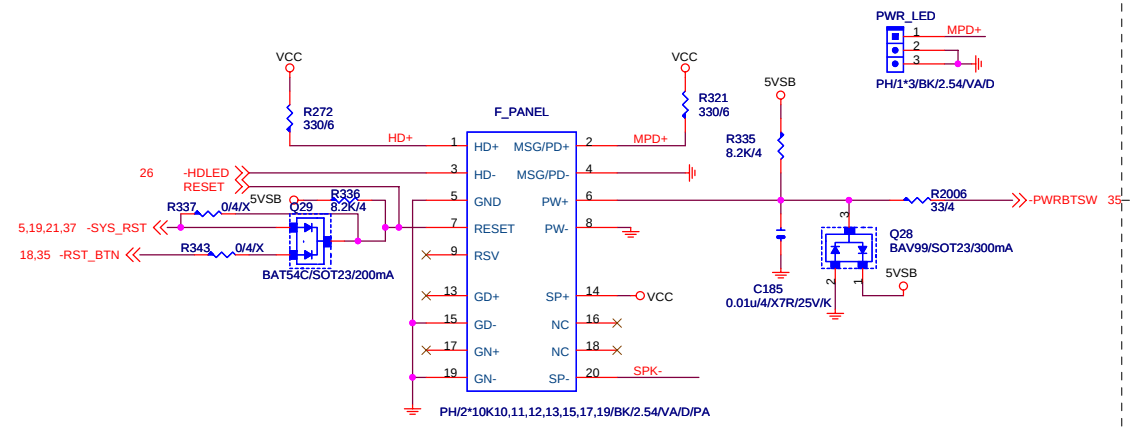
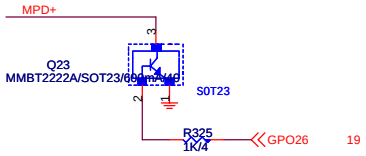
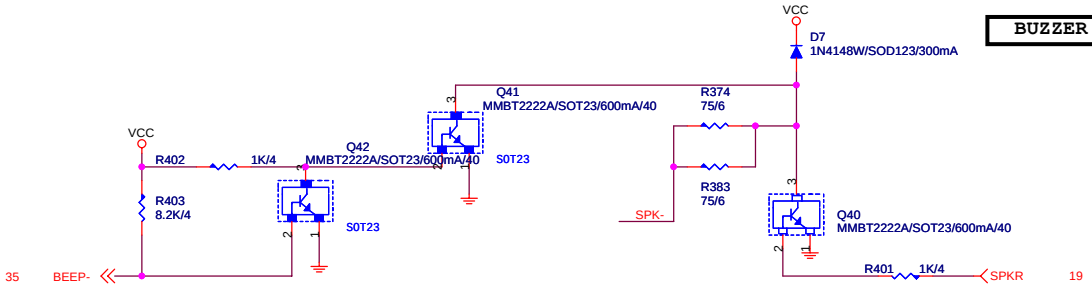
INTEL FRONT PANEL

3 PIN POWER LED
LAYOUT PLACE CLOSE
TO F_PANEL





BUZZER



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Title	FRONT PANEL	
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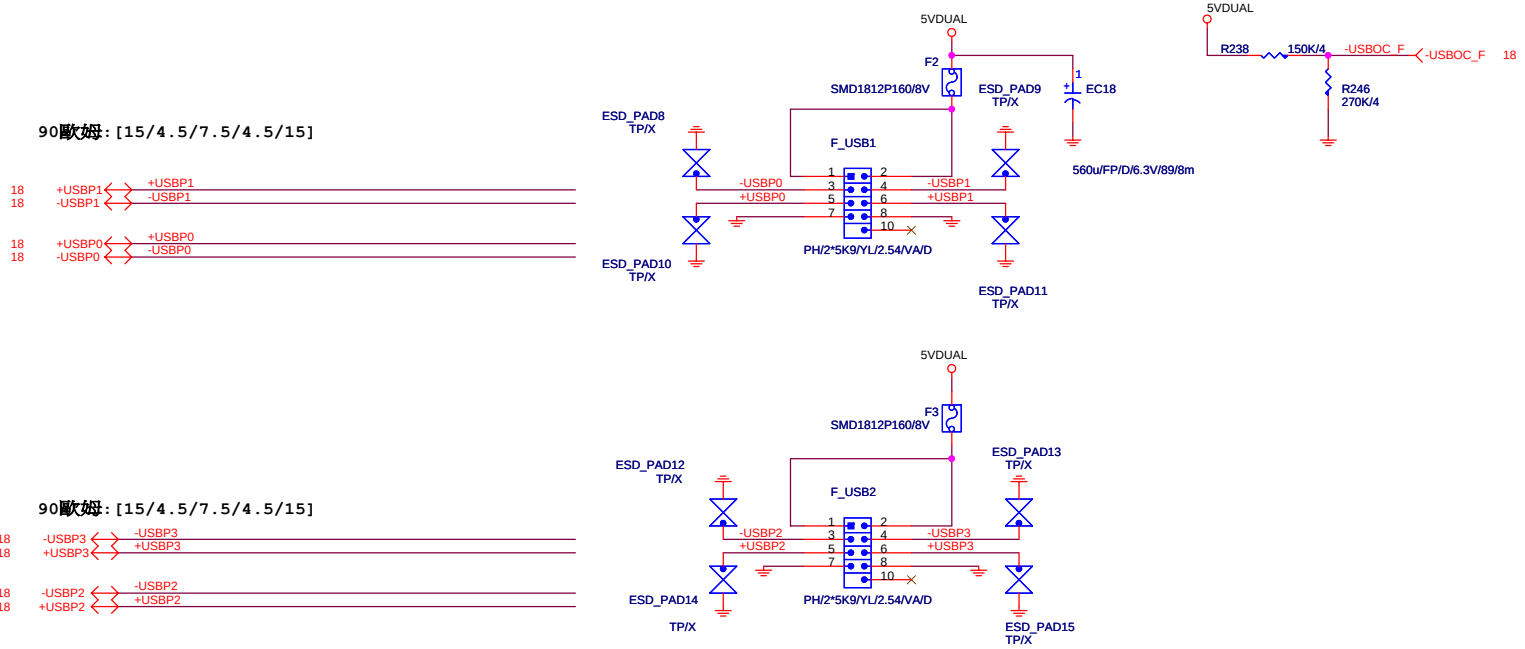
FRONT USB



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Title	FRONT USB CONNECTOR	
Size: B	Document Number: EP31-DS3L	Rev: 1.02
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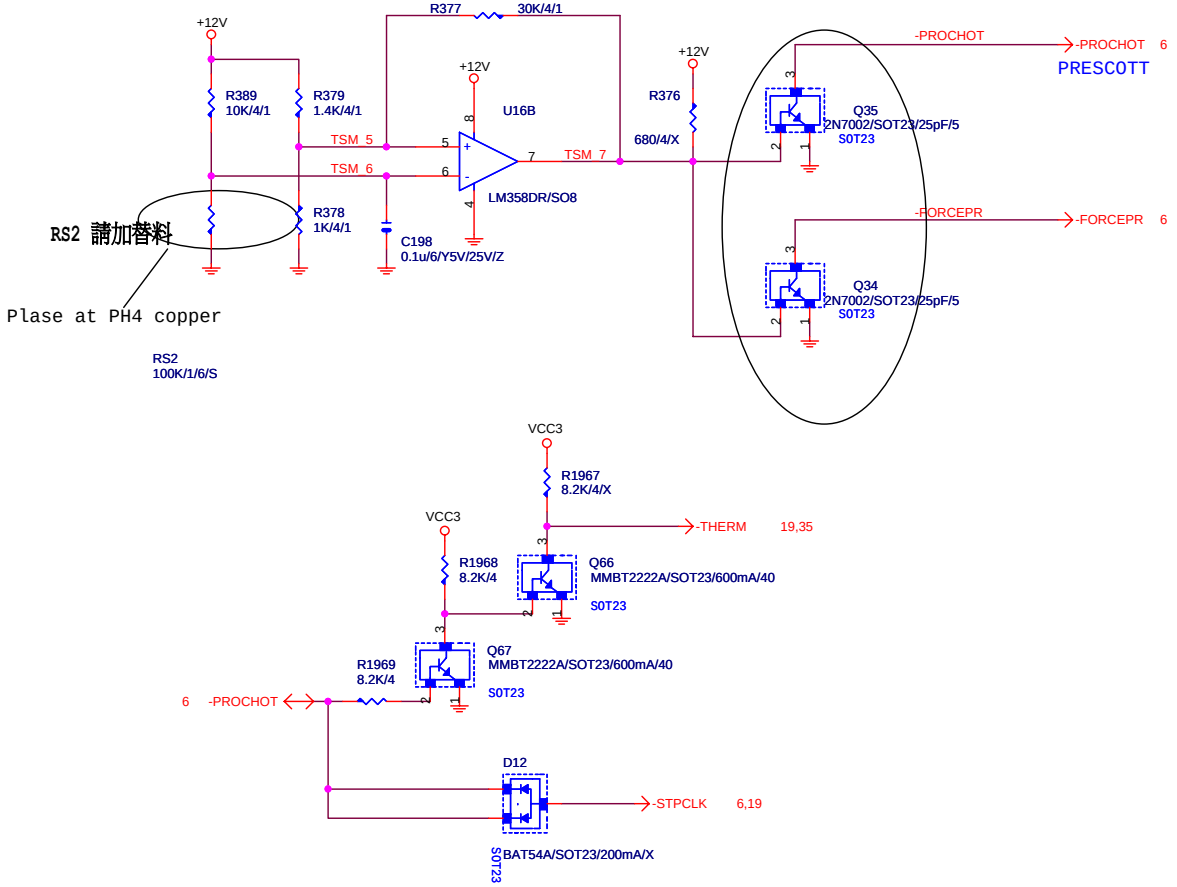
asserted at 131 degree
deasserted at 116 degree

RS2 CLOSE CPU VR MOSFET



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Title	PROCHOT	
Size B	Document Number EP31-DS3L	Rev 1.02
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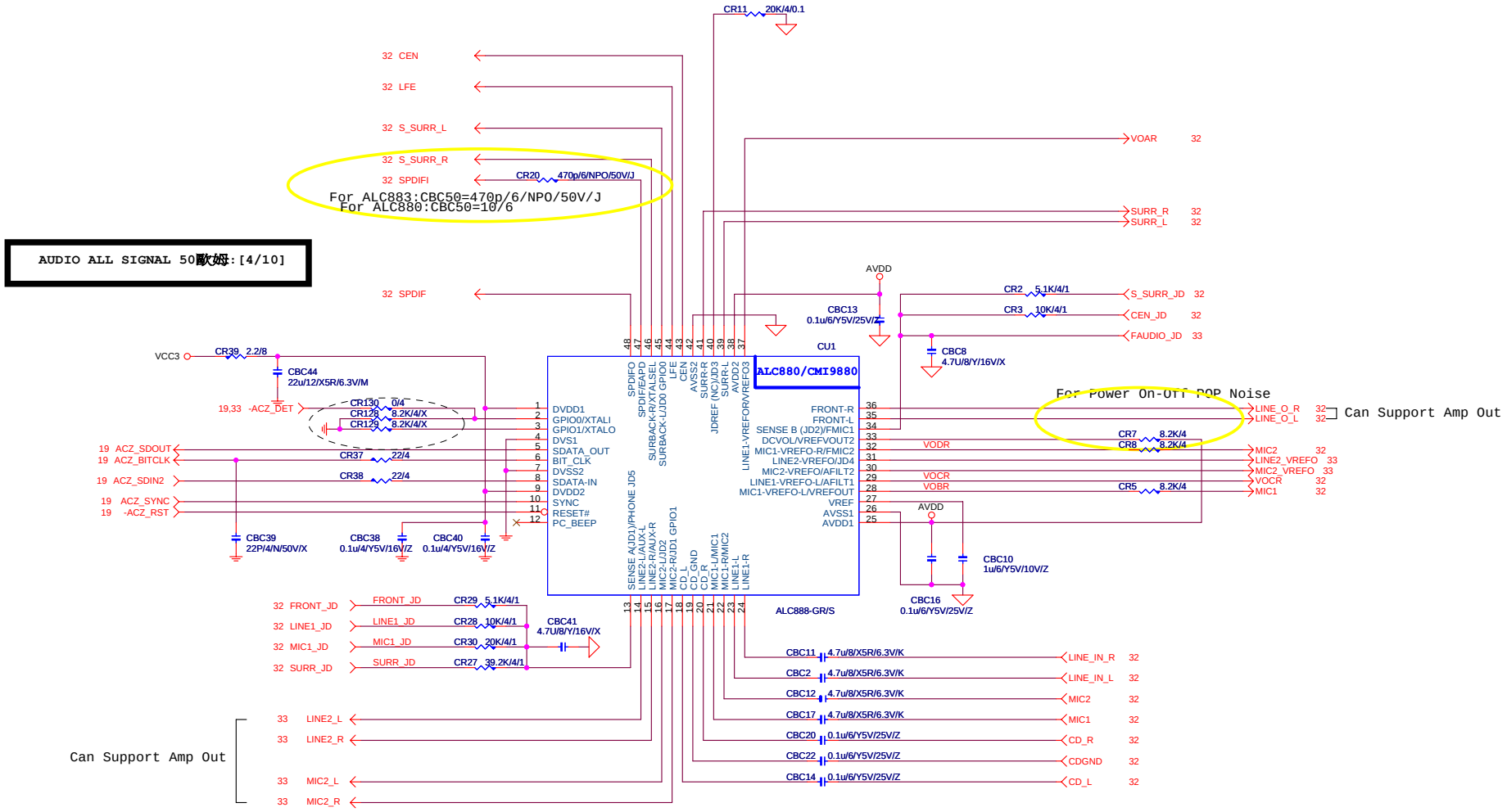

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Title	ALC888	
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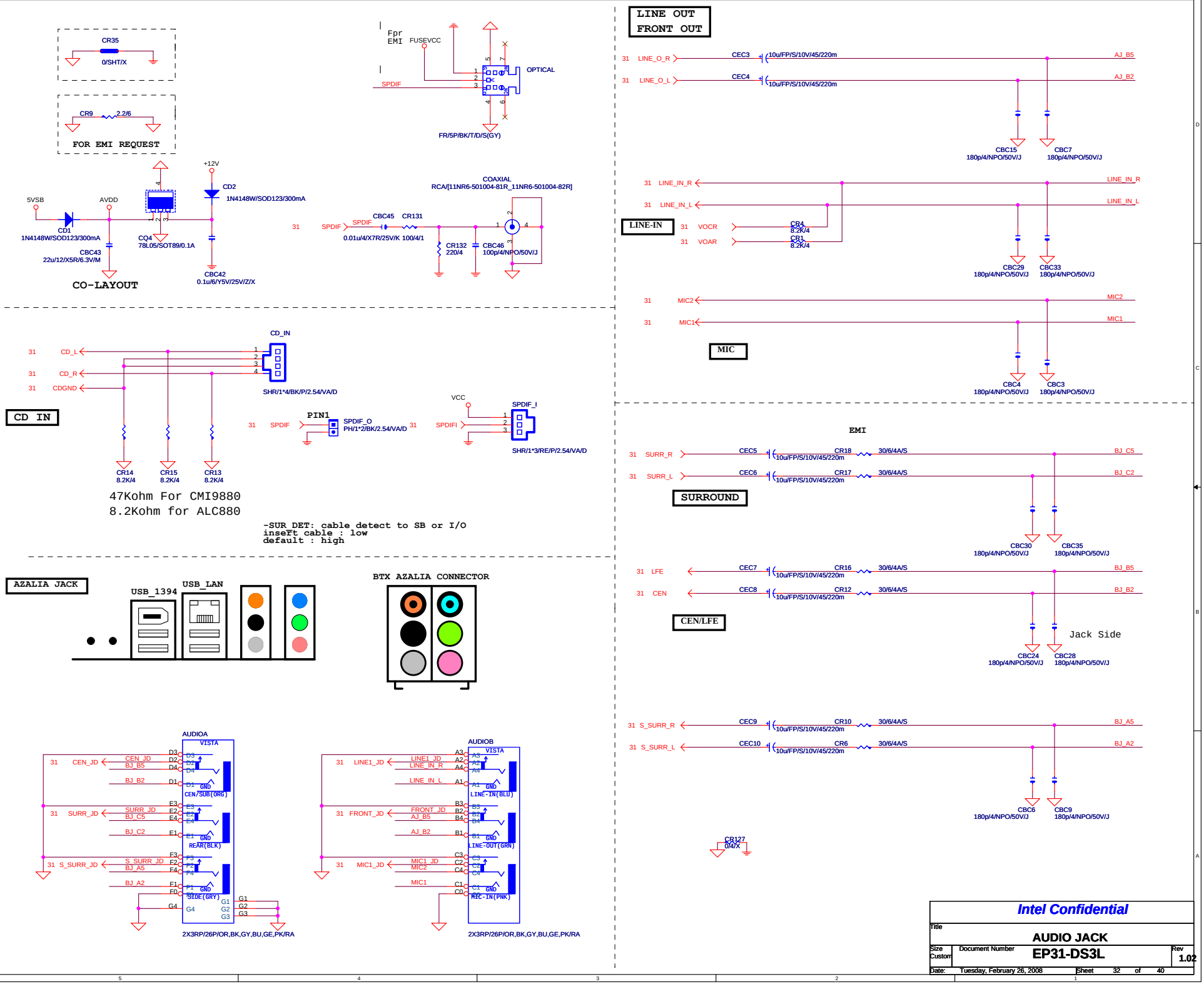
CR35
0/SHT/X
CR9
2.2/6
FOR EMI REQUEST
Fpr
EMI
FUSEVCC
SPDIF
OPTICAL
FR/5P/BK/T/D/S(GY)
+12V
CD2
1N4148W/SOD123/300mA
5VSB
AVDD
CD1
1N4148W/SOD123/300mA
CQ4
78L05/SOT89/0.1A
CBC43
22u/12/X5R/6.3V/M
CBC42
0.1u/6/Y5V/25V/Z/X
CO-LAYOUT
COAXIAL
RCA/[11NR6-501004-81R_11NR6-501004-82R]
CBC45
CR131
0.01u/4/X7R/25V/K
100/4/1
CR132
220/4
CBC46
100p/4/NPO/50V/J
LINE OUT
FRONT OUT
LINE_O_R
LINE_O_L
CEC3
CEC4
10u/FP/S/10V/45/220m
AJ_B5
AJ_B2
CBC15
180p/4/NPO/50V/J
CBC7
180p/4/NPO/50V/J
LINE_IN_R
LINE_IN_L
LINE-IN
VOCR
VOAR
CR4
8.2K/4
CR1
8.2K/4
CBC29
180p/4/NPO/50V/J
CBC33
180p/4/NPO/50V/J
MIC2
MIC1
MIC
CBC4
180p/4/NPO/50V/J
CBC3
180p/4/NPO/50V/J
CD_IN
CD_L
CD_R
CDGND
SHR/1*4/BK/P/2.54/VA/D
CD IN
PIN1
SPDIF_O
PH/1*2/BK/2.54/VA/D
VCC
SPDIF_I
SHR/1*3/RE/P/2.54/VA/D
CR14
8.2K/4
CR15
8.2K/4
CR13
8.2K/4
47Kohm For CMI9880
8.2Kohm for ALC880
-SUR_DET: cable detect to SB or I/O
inseft cable : low
default : high
EMI
SURR_R
SURR_L
CEC5
CEC6
CR18
CR17
30/6/4A/S
BJ_C5
BJ_C2
SURROUND
CBC30
180p/4/NPO/50V/J
CBC35
180p/4/NPO/50V/J
LFE
CEN
CEC7
CEC8
CR16
CR12
BJ_B5
BJ_B2
CEN/LFE
Jack Side
CBC24
180p/4/NPO/50V/J
CBC28
180p/4/NPO/50V/J
AZALIA JACK
USB_1394
USB_LAN
BTX AZALIA CONNECTOR
S_SURR_R
S_SURR_L
CEC9
CEC10
CR10
CR6
BJ_A5
BJ_A2
CBC6
180p/4/NPO/50V/J
CBC9
180p/4/NPO/50V/J
CR127
0/4/X
AUDIOA
VISTA
CEN_JD
SURR_JD
S_SURR_JD
CEN/SUB(ORG)
REAR(BLK)
SIDE(GRY)
2X3RP/26P/OR,BK,GY,BU,GE,PK/RA
AUDIOB
LINE1_JD
FRONT_JD
MIC1_JD
LINE-IN(BLU)
LINE-OUT(GRN)
MIC-IN(PNK)
2X3RP/26P/OR,BK,GY,BU,GE,PK/RA
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AUDIO JACK
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Custom
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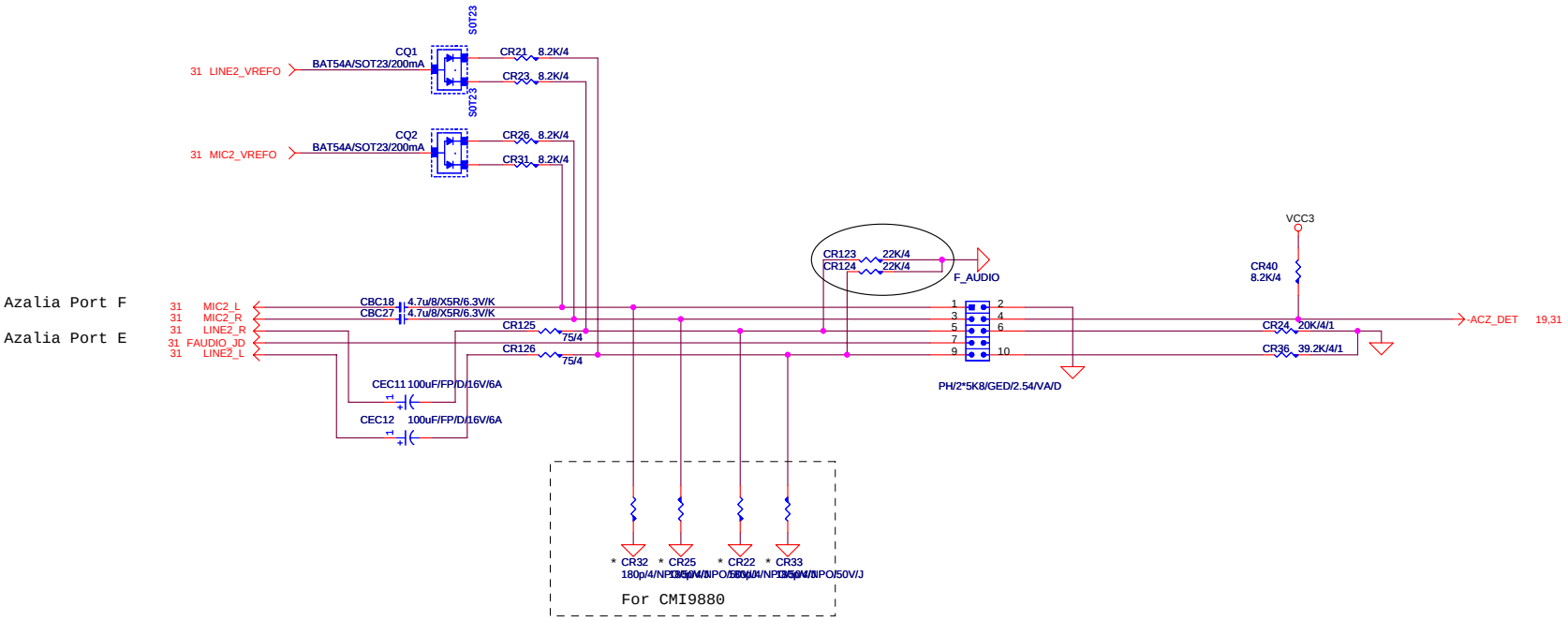

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Title: FRONT AUDIO CONNECTOR			
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PCIE-1G LAN

RTL8111C

3VDUAL

LR23 2.2/6/X

LR24 2.2/6/X

LBC61 0.1u/6/Y5V/25V/Z/X

LBC62 22u/8/X5R/6.3V/M/X

LR33 0/4/X

LBC39 0.1u/6/Y5V/25V/Z

LBC40 0.1u/6/Y5V/25V/Z

21 25MCLK_LAN

LC5 10p/4/NPO/50V/J

LR16 2.49K/4/1

RSET CTRL15 AVDD33 VDD15 3VDUAL VDD15 VDD15

LED_ACT_TXRX

LED_LINK100

LED_LINK1000

LU1

CTRL18	1	VCTRL18	
AVDD33	2	AVDD33	
P_MDI0+	3	MDIP0	
P_MDI0-	4	MDIN0	
FB12	5	AVDD18	
P_MDI1+	6	MDIP1	
P_MDI1-	7	MDIN1	
AVDD18	8	AVDD18	
P_MDI2+	9	MDIP2	
P_MDI2-	10	MDIN2	
AVDD18	11	AVDD18	
P_MDI3+	12	MDIP3	
P_MDI3-	13	MDIN3	
AVDD18	14	AVDD18	
VDD15	15	VDD15	
3VDUAL	16	VDD33	
	17	EGND	
	18	NC	
	19	NC	
	20	LANWAKEB	
	21	EESCLK	
	22	VDD15	
	23	EVDD18	
	24	HSIP	
	25	HSIN	
	26	EGND	
	27	REFCLK_P	
	28	REFCLK_N	
	29	EVDD18	
	30	HSOP	
	31	HSON	
	32	EGND	
	33	VDD15	
	34	VDD15	
	35	VDD15	
	36	ISOLATEB	
	37	3VDUAL	
	38	VDD15	
	39	NC	
	40	NC	
	41	VDD1	
	42	NC	
	43	VDD15	
	44	EECS	
	45	EEDO	
	46	3VDUAL	
	47	EEDI_AUX	
	48	EESK	
	49	VDD15	
	50	NC	
	51	VDD15	
	52	VDD33	
	53	VDD15	
	54	LED3	
	55	LED2	
	56	LED1	
	57	LED0	
	58	VDD15	
	59	AVDD33	
	60	CKTAL2	
	61	CKTAL1	
	62	GVDD	
	63	VCTRL15	
	64	RSET	
	65	EGND	

RTL8111B-GR/QFP128

VCC3

LR37 200/4/X

LR17 1K/4/1

LR18 15K/4

LR31 0/4

VDD15

35 LAN_ISO

S0T23

LD2 BAT54A/SOT23/200mA/[10DK1-320054-12R_10DK1-320054-13R]/X

17,19,23 -PCIE_WAKE

11,35 -PFMRST1

100歐姆:[20/5/7/5/20]

18	ML_OP
18	ML_ON
21	SRCCLK_LAN
21	-SRCCLK_LAN
18	ML_IP
18	ML_IN

LC3 0.1u/4/Y5V/16V/Z

LC4 0.1u/4/Y5V/16V/Z

50歐姆:[18/4/10/4/18]

-PFMRST1 LBC34 100p/4/NPO/50V/J/X

LED_GREEN LR22 LED_LINK100

0/6/SHT/X

R1.0 10M LED OFF

Dual Color LED

D4 D3 Green

D4 D3 Orange

Single Color LED

D2 D1 Yellow

P35-152-19W9

U4 U3 U2 U1

U8 U7 U6 U5

L1 L3 L5 L7 L9

L2 L4 L6 L8 L10

D1 D2 D3 D4

YELLOW ORANGE (+,-) GREEN (-,+)

Power domain chart

	RTL8111B / RTL8101E	RTL8111C
AVDD33	3.3V	3.3V
AVDD18	1.8V	1.2V
EVDD18	1.8V	1.2V
DVDD15	1.5V	1.2V

USB_LAN CONNECTOR

LAN 100歐姆:[30/4/8/4/30] FOR B 製程

USB_LAN

P_MDI0+	L1	D1	LED_ACT_TXRX
P_MDI0-	L2	D2	LR13 150/6
P_MDI1+	L3	D3	LED_GREEN LR14 150/6
P_MDI1-	L4	D4	LED_LINK1000 LR15 150/6
P_MDI2+	L5		
P_MDI2-	L6		
P_MDI3+	L7		
P_MDI3-	L8		
	L9		
	L10		
		U1	FUSEVCC
		U2	-USBP4 +USBP4
		U3	-USBP4 +USBP4
		U4	
		U5	
		U6	-USBP5 +USBP5
		U7	-USBP5 +USBP5
		U8	

UP

DOWN

LBC30 0/6

3VDUAL

LFB4 0/6/SHT/X

LBC33 0.1U/6/Y5V/25V/Z/X

LBC26 0.1u/6/Y5V/25V/Z/X

90歐姆:[15/4.5/7.5/4.5/15]

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

3VDUAL

LEC7 100uF/FP/D/16V/6A

LBC35 0.1u/6/Y5V/25V/Z/X

LBC36 0.1u/4/Y5V/16V/Z

LBC37 0.1u/6/Y5V/25V/Z/X

LBC38 0.1u/6/Y5V/25V/Z

3VDUAL

LFB5 0/8/SHT/X

LBC43 0.1u/6/Y5V/25V/Z

LBC41 4.7u/8/Y5V/10V/Z

LBC42 0.1u/6/Y5V/25V/Z

VDD15

LQ1 BCP69/SOT223/-1A/60

CTRL15

LR34 0/6/X

LD1 MMSZ5227B/SOD123/3.6V/X

VDD15

VDD18

LFB8 0/8/X

LBC44 0.1u/6/Y5V/25V/Z

LBC45 0.1u/6/Y5V/25V/Z

LBC46 0.1u/4/Y5V/16V/Z

LBC47 0.1u/4/Y5V/16V/Z

LBC48 0.1u/6/Y5V/25V/Z

LEC2 100uF/FP/D/16V/6A

LBC49 4.7u/8/Y5V/10V/Z/X

LBC50 0.1u/6/Y5V/25V/Z

3VDUAL

AVDD33

LFB6 0/8/SHT/X

LBC51 0.1u/4/Y5V/16V/Z

LBC52 4.7u/8/Y5V/10V/Z

LBC53 0.1u/6/Y5V/25V/Z

VDD18

4.7uH/0.5A/2520/S/[10LC3-5A470B-01R]/X

LQ2 2SB1132/SOT89/-1A/82

LR36 0/4

FB12

CTRL18

LL1

AVDD18

LFB7 0/8

VDD18

LEC6 100uF/FP/D/16V/6A

LBC54 0.1u/6/Y5V/25V/Z

LBC55 0.1u/6/Y5V/25V/Z

LBC56 0.1u/6/Y5V/25V/Z

LBC58 4.7u/8/Y5V/10V/Z

LBC57 0.1u/6/Y5V/25V/Z

LBC59 0.1u/4/Y5V/16V/Z

LR35 8.2K/4/X

3VDUAL

LU2

EECS	1	CS	VCC 8
EESK	2	SK	DC 7
EEDI_AUX	3	DI	ORG 6
EEDO	4	DO	GND 5

AT93C46-10SI-2.7/S

LBC60 0.1u/6/Y5V/25V/Z

LR19 3.6K/4

3VDUAL

ESD_PAD20 TP/X

ESD_PAD21 TP/X

ESD_PAD22 TP/X

ESD_PAD23 TP/X

-USBP4 +USBP4

-USBP4 +USBP4 18

-USBP4 +USBP4 18

-USBP5 +USBP5

-USBP5 +USBP5 18

-USBP5 +USBP5 18

FUSEVCC

LR12 150K/4

-USBOC_R

-USBOC_R 18

LEC3 560u/FP/D/6.3V/89/8m

LR11 270K/4

LR1 0/6/X

Gigabyte Technology

Title: REALTEK RTL8111B/C

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RTS2- ==LOW CPU FAN 50%
==HIGH 100%

SOUT2		
	1	VID pins threshold voltage select: Vih / Vil : 2.0 / 0.8V
	0	VID pins threshold voltage select: Vih / Vil : 0.8 / 0.4V

1.2V or 3.3V tolerance select.
1.2V OUTPUT 接 VTT_GMCH
3.3V OUTPUT 接3.3V
LPCPD#=VIDVCC

U2
IT8718 GX_GB/QFP128

Case Open Circuits

JP7 : LOW DUAL BIOS DISABLE
HIGH DUAL BIOS ENABLE

如果BSEL0/1 直接拉TO
N/B,R264/R265 不上

SOUT2	1	VID pins threshold voltage select: Vih / Vil : 2.0 / 0.8V
	0	VID pins threshold voltage select: Vih / Vil : 0.8 / 0.4V
DTR2-	1	Open Drain pin:Driving 較弱
	0	Push-pull Pin :Driving 較強
RTS2-	1	CPU FAN 100%
	0	CPU FAN 50%

1.2V or 3.3V tolerance select.
1.2V OUTPUT 接 VTT_GMCH
3.3V OUTPUT 接3.3V
LPCPD#=VIDVCC

VTT_GMCH/VCC3/VIDVCC 請走20~30

GIGABYTE THCHNOLOGIES , INC.

Title: ITE 8718 LPC IO

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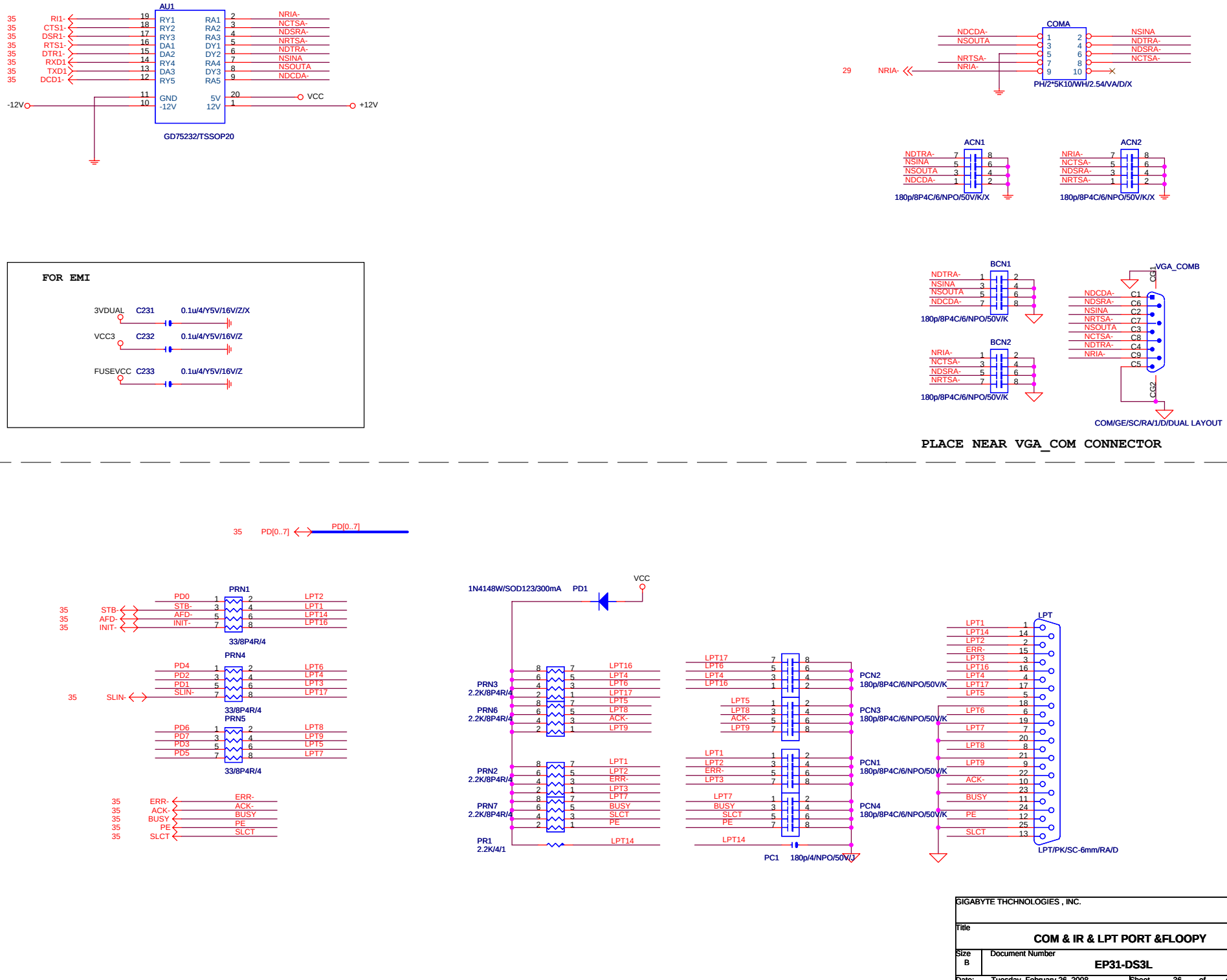

GIGABYTE THCHNOLOGIES , INC.		
Title: COM & IR & LPT PORT &FLOOPY		
Size: B	Document Number: EP31-DS3L	Rev: 1.02
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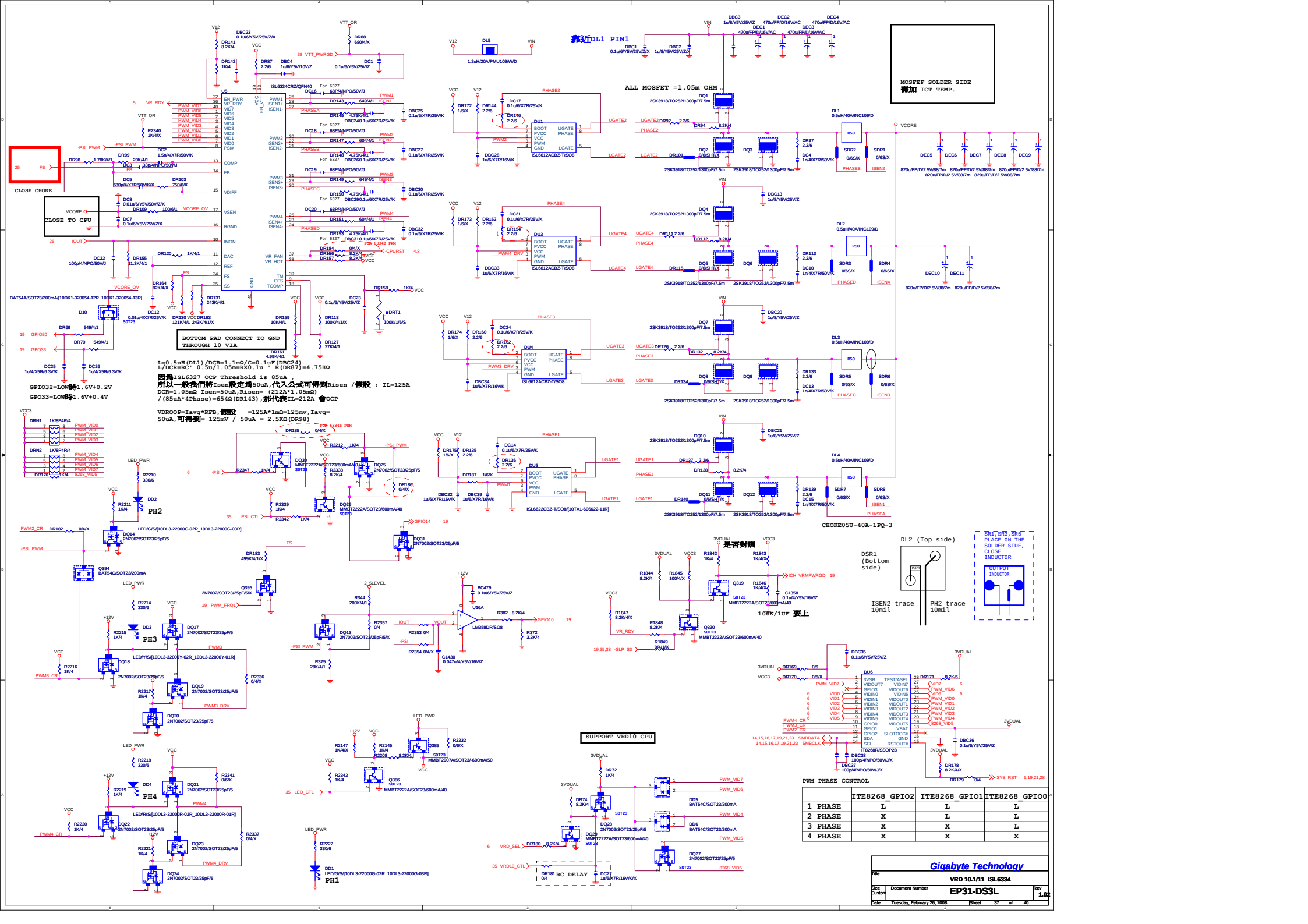
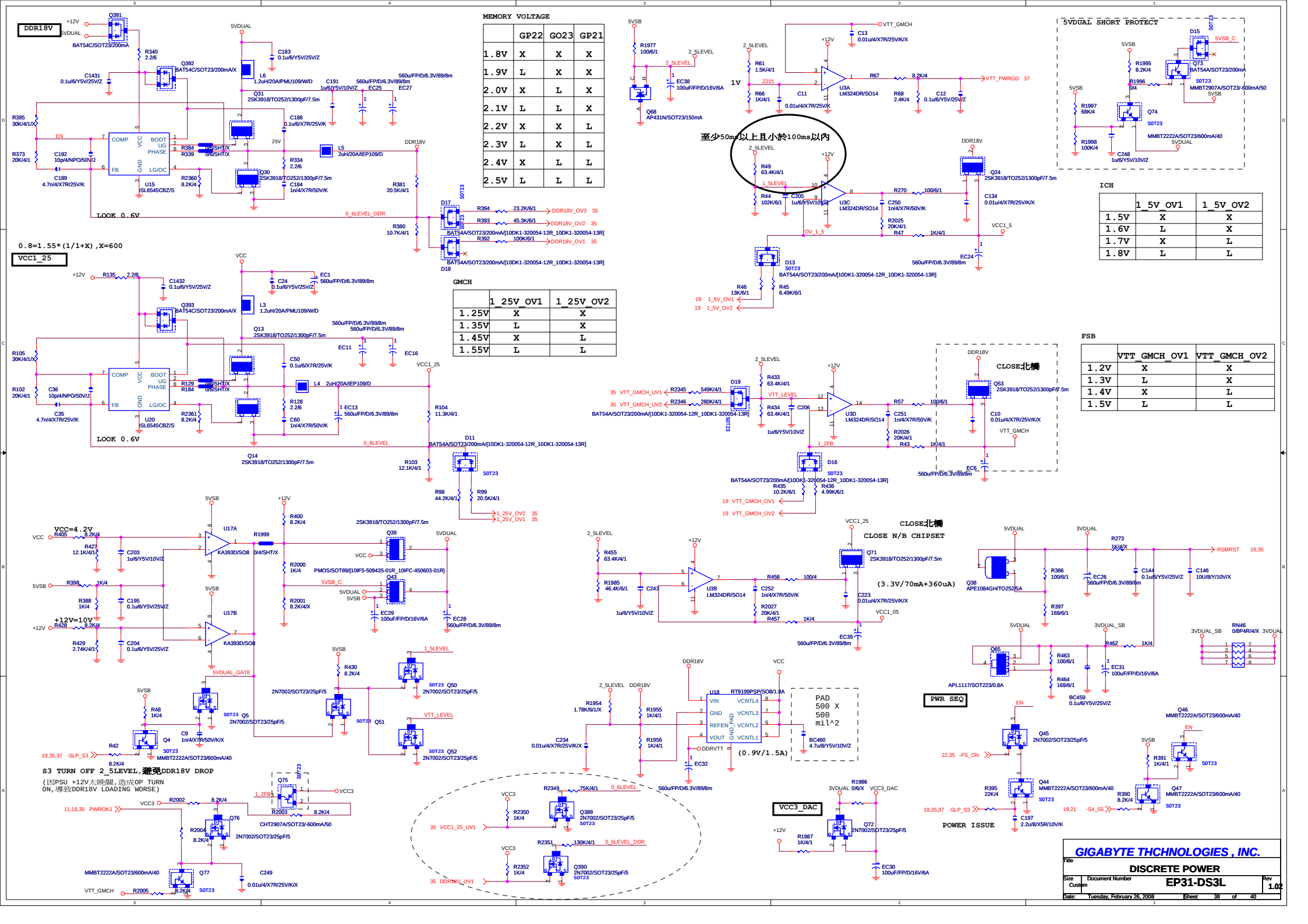


	ITE8268_GPIO2	ITE8268_GPIO1	ITE8268_GPIO0
1 PHASE	L	L	L
2 PHASE	X	L	L
3 PHASE	X	X	L
4 PHASE	X	X	X


DDR18V
VCC1_25
MEMORY VOLTAGE
GP22 GO23 GP21
1.8V X X X
1.9V L X X
2.0V X L X
2.1V L L X
2.2V X X L
2.3V L X L
2.4V X L L
2.5V L L L
GMCH
1_25V_OV1 1_25V_OV2
1.25V X X
1.35V L X
1.45V X L
1.55V L L
ICH
1_5V_OV1 1_5V_OV2
1.5V X X
1.6V L X
1.7V X L
1.8V L L
FSB
VTT_GMCH_OV1 VTT_GMCH_OV2
1.2V X X
1.3V L X
1.4V X L
1.5V L L
5VDUAL SHORT PROTECT
至少50ms以上且小於100ms以內
CLOSE北橋
CLOSE N/B CHIPSET
VCC=4.2V
+12V=10V
S3 TURN OFF 2_5LEVEL,避免DDR18V DROP
(因PSU +12V太晚關,造成OP TURN ON,導致DDR18V LOADING WORSE)
0.8=1.55*(1/1+X),X=600
LOOK 0.6V
PAD 500 X 500 mil^2
(0.9V/1.5A)
(3.3V/70mA+360uA)
PWR SEQ
POWER ISSUE
GIGABYTE THCHNOLOGIES , INC.
DISCRETE POWER
EP31-DS3L
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GPI26

INTEL ICH7 GPIO Implementation

紅字表示CPI/O 同PIN

GPI PIN

Pin Name	Pin Type	Power Well			GPIO Application
GPIO[0]	I/O	VCC3	GPI/BM_BUSY#	(NA)	(NA)
GPIO[1]	I/O	VCC	-REQ[5]	(P.U VCC)	-REQ[5]
GPIO[5:2]	I/OD	VCC	-PIRQ[H:E]	(P.U VCC)	-PIRQ[H:E]
GPIO[6]	I/O	VCC3	GPI	(NA)	M_ID0 FOR MEDIA
GPIO[7]	I/O	VCC3	GPI	(NA)	DUALBIOS_INPUT
GPIO[8]	I/O	3VDUAL	GPI	(P.U 3VDUAL)	-SKTOCC
GPIO[9]	I/O	3VDUAL	GPI	(NA)	P66DET
GPIO[10]	I/O	3VDUAL	GPI	(NA)	M_ID1 FOR MB_ID
GPIO[11]	I/O	3VDUAL	-SMBALERT	(P.U 3VDUAL)	-SMBALRT
GPIO[12]	I/O	3VDUAL	GPI	(NA)	M_ID2 FOR MB_ID
GPIO[13]	I/O	3VDUAL	GPI	(P.U 3VDUAL)	-LPCPME
GPIO[14]	I/O	3VDUAL	GPI	(NA)	M_ID3 FOR MB_ID
GPIO[15]	I/O	3VDUAL	GPI	(NA)	-ACZ_DET
GPIO[16]	I/O	VCC3	GPO	P.D 20K(INT.)	HW RESET
GPIO[17]	I/O	VCC3	GPO/-GNT[5]	(NA)	GPO/-GNT[5]
GPIO[18]	I/O	VCC3	GPO/toggle	(NA)	(NA)
GPIO[19]	I/O	VCC3	SATA1GP	(P.U VCC3)	SATA1GP
GPIO[20]	I/O	VCC3	GPO	(P.U VCC3)	TBL-
GPIO[21]	I/O	VCC3	SATA0GP	(P.U VCC3)	SATA0GP
GPIO[22]	I/O	VCC3	-REQ[4]	(P.U VCC)	-REQ[4]
GPIO[23]	I/O	VCC3	LDRQ1#	(NA)	(NA)
GPIO[24]	I/O	3VDUAL	GPO/reset not cleared	(NA)	(NA)
GPIO[25]	I/O	3VDUAL	GPO	(NA)	PWD_LED
GPIO[26]	I/O	3VDUAL	EL_RSVD	(P.D)	-SPI_WP
GPIO[27]	I/O	3VDUAL	EL_STATE0	(NA)	(NA)
GPIO[28]	I/O	3VDUAL	EL_STATE1	(NA)	(NA)
GPIO[29]	I/O	3VDUAL	OC5#	(P.U VCC 分壓))	OC5#
GPIO[30]	I/O	3VDUAL	OC6#	(P.U VCC 分壓))	OC6#
GPIO[31]	I/O	3VDUAL	OC7#	(P.U VCC 分壓))	OC7#
GPIO[32]	I/O	VCC3	GPO	(NA)	DUAL_BIOS
GPIO[33]	I/O	VCC3	GPO	(NA)	DUAL_BIOS
GPIO[34]	I/O	VCC3	GPO	(P.U VCC3)	FWP-
GPIO[35]	I/O	VCC3	SATACLKREQ#	(NA)	(NA)
GPIO[36]	I	VCC3	SATA2GP	(P.U VCC3)	SATA2GP
GPIO[37]	I	VCC3	SATA3GP	(P.U VCC3)	SATA3GP

GPO PIN

Pin Name	Pin Number	Power Well	Pin Type		GPIO Application
GPIO[38]	I/O	VCC3	GPI	(NA)	(NA)
GPIO[39]	I/O	VCC3	GPI	(NA)	(NA)
GPIO[40:47]		NOT IMPLEMENTED		NOT IMPLEMENTED	
GPIO[48]	I/O	VCC3	-GNT[4]	(NA)	-GNT[4]
GPIO[49]	I/O	VTT_GMCH	CPUPWRGD	(P.U VTT_OL)	CPUPWROK
PCI1	PCLK0	-PCIRST	-REQ0/-GNT0	-PIRQE	A_D16
PCI2	PCLK1	-PCIRST	-REQ1/-GNT1	-PIRQD	A_D17
PCI3	PCLK2	-PCIRST	-REQ2/-GNT2	-PIRQC	A_D18
1394b	1394CLK	-PFMRST2	-REQ3/-GNT3	-PIRQH	A_D23
IT8212	RAIDCLK	-PFMRST2	-REQ4/-GNT4	-PIRQG	A_D22

GIGABYTE

Title: GPIO TABLE

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ICH7 GPIO Table:

NAME	PWR LANE	USAGE	NAME	PWR LANE	USAGE
GPI0	V5REF	M/B ID (-REQ6)	GPI41	VCC3	M/B ID
GPI1	V5REF	-REQ5	GPO48	VCC3	-GNT4
GPI2	V5REF	-PIRQE	GPO49	V-CPUIO	CPUPWOK
GPI3	V5REF	-PIRQF			
GPI4	V5REF	-PIRQG			
GPI5	V5REF	-PIRQH			
GPI6	VCC3	-SLP_BTN			
GPI7	VCC3	DUAL BIOS			
GPI8	3VDAUL	-LANWAKE			
GPI9	3VDAUL	-USBOC4			
GPI10	3VDAUL	-USBOC5			
GPI11	3VDAUL	-SMBALT			
GPI12	VCC3	ATX_DET			
GPI13	3VDAUL	-LPCPME			
GPI14	3VDAUL	-USBOC6			
GPI15	3VDAUL	-USBOC7			
GPO16	VCC3	CPU OV1 (-GNT6)			
GPO17	VCC3	-GNT5			
GPO18	VCC3	CPU OV2			
GPO19	VCC3	DUAL BIOS			
GPO20	VCC3	BIOS T-BLOCK			
GPO21	VCC3	DUAL BIOS			
GPO23	VCC3	DDR OV0			
GPIO24	3VDAUL	GREEN LED			
GPIO25	3VDAUL	DDR OV1			
GPI26	VCC3	SATA_GP0			
GPIO27	3VDAUL	+PWRLED			
GPIO28	3VDAUL	-PWRLED			
GPI29	VCC3	SATA GP1			
GPI30	VCC3	SATA GP2			
GPI31	VCC3	SATA GP3			
GPIO32	VCC3	BIOS WP			
GPIO33	VCC3	AZALIA DET			
GPIO34	VCC3	PWRLED			
GPI40	V5REF	-REQ4			

PWROK/RESET Table:

ITE8712BHX PIN	NET NAME	TARGET
PIN62/-PCIRST1	-PCIE_RST	1. PCI-E * 1 Slot1 2. PCI-E * 1 Slot2 3. PCI-E * 1 Slot3 4. PCI-E * 16 Slot
PIN64/-PCIRST2	-PFMRST2	1. Onboard PCI Lan 2. Onboard 1394 Chip 3. OnBoard FWH
PIN65/-PCIRST3	-PFMRST1	1. Onboard PCI-E Lan 2. Onboard SATA Chip 3. GMCH
PIN115/-PCIRST4	-PFMRST_ -IDERST	Reserved For IDE
PIN63/PWROK1	PWROK1	1. GMCH 2. ICH6 3. 5VDUAL SWITCH 4. DPS CONTROL
PIN109/PWROK2	-THERM	1. ICH6

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Title: GPIO/RESET TABLE

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