

# GIGABYTE GA-8IE2004 Schematics

Revision 1.0

SHEET

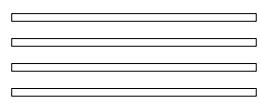
TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	WILLIAMATE_478A
04	WILLIAMATE_478B
05	WILLIAMATE_478C
06	MCH-BROOKDALE-E_A
07	MCH-BROOKDALE-E_B
08	MCH-BROOKDALE-E_C
09	MD0~63
10	DDR1~2
11	DDR-TERM
12	AGP
13	ICH4_1
14	ICH4_2
15	FWH (SINGLE BIOS)
16	ICS950223 CLOCK GEN
17	PCI1_2
18	PCI3_4
19	PCI5
20	ITE LPC I/O
21	IDE
22	KB_PS2

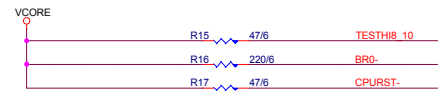
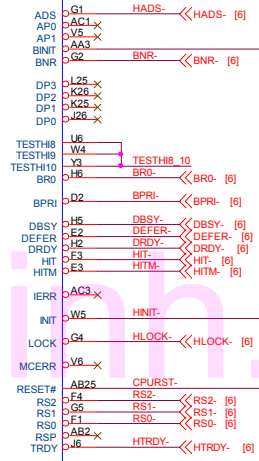
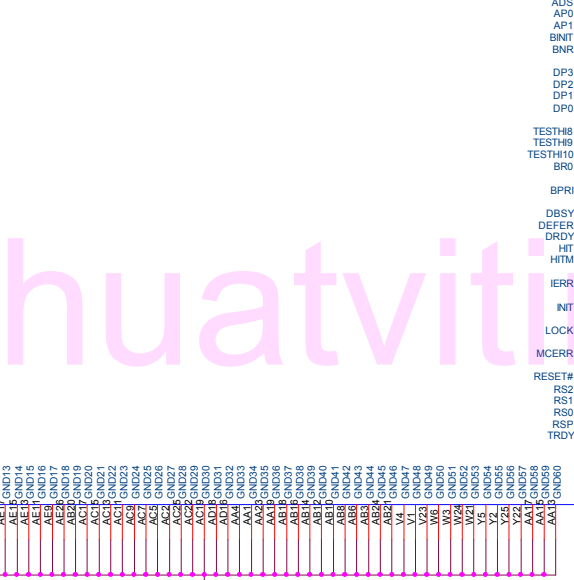
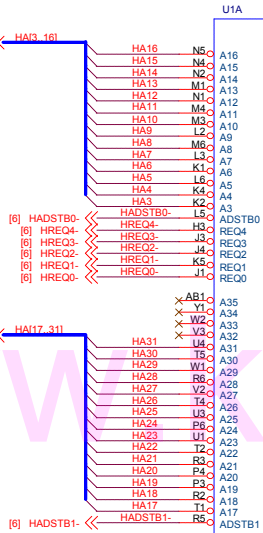
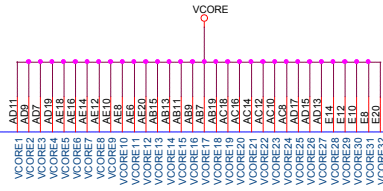
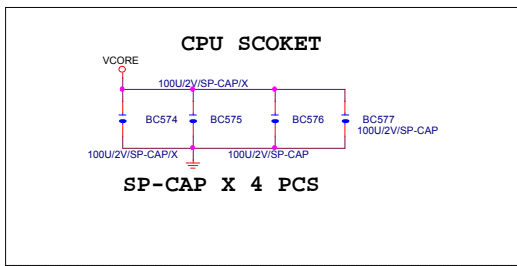
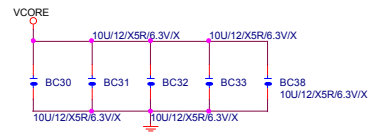
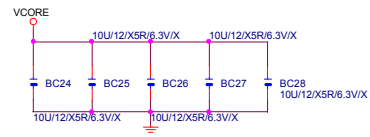
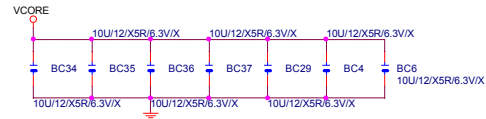
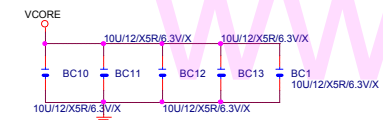
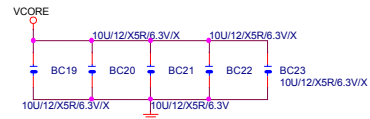
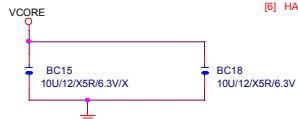
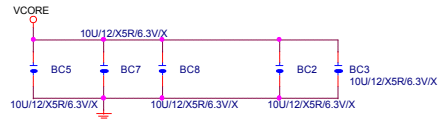
SHEET

TITLE

23	COM_LPT_FDD
24	F-USB1 & F-USB2
25	FPANEL
26	CODEC
27	AUDIO_GAMEPORT
28	AUDIO_SPDIF
29	DDR POWER
30	POWER1
31	POWER2
32	LAN RTL8100C & B-USB CONNECTOR
33	GPIO LIST
34	PCI ROUNT LIST
35	
36	
37	
38	
PCB	4V藍C

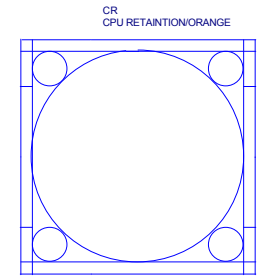
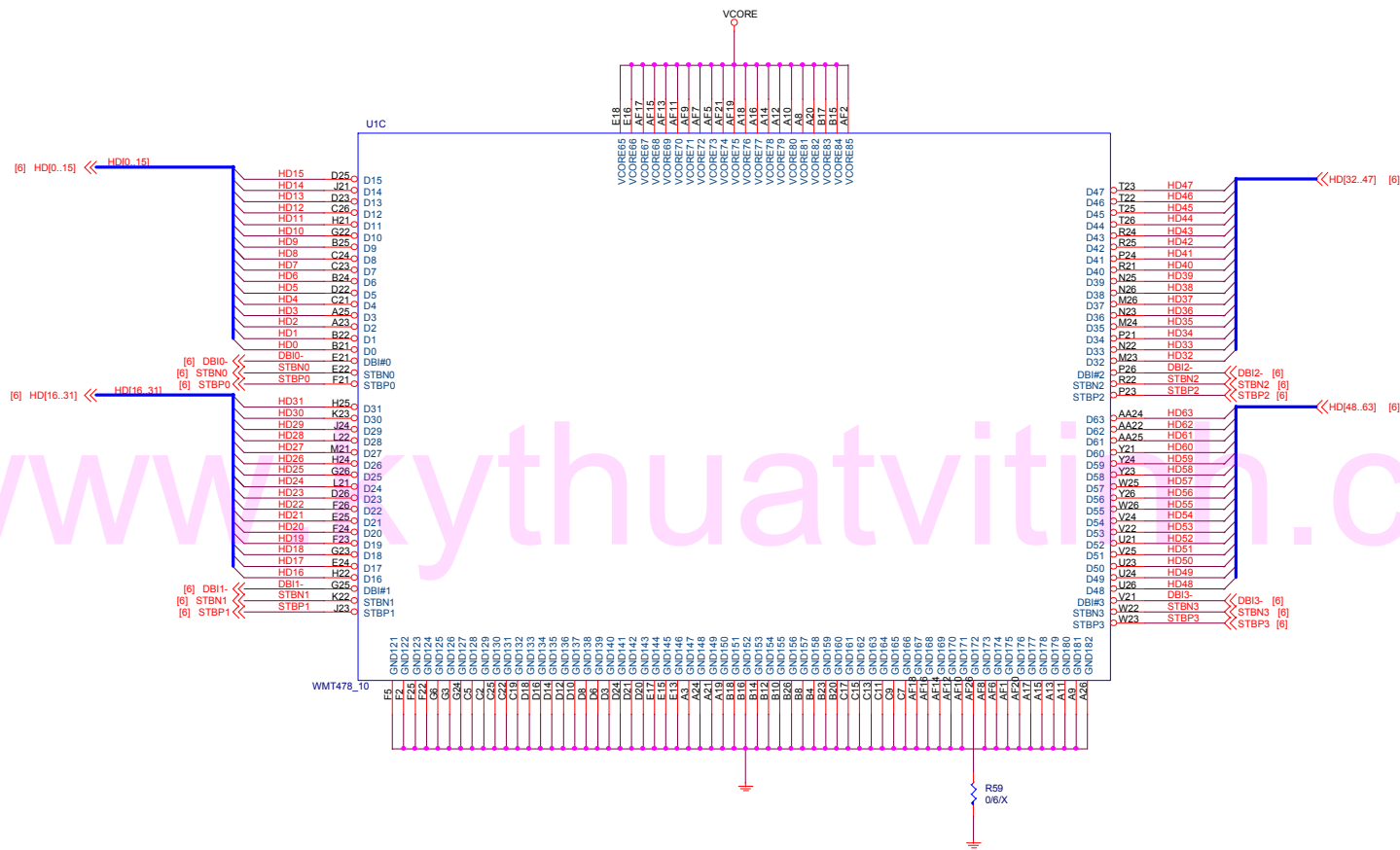
		COMPONENT SIDE (0.5 oz. Copper) VCC SIDE (1 oz. Copper) GND SIDE (1 oz. Copper) SOLDER SIDE (0.5 oz. Copper)
<b>GIGABYTE</b>		
Title: COVER SHEET		
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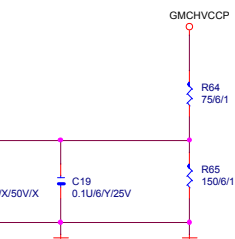
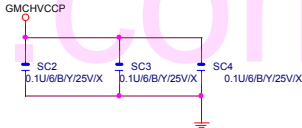
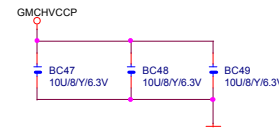
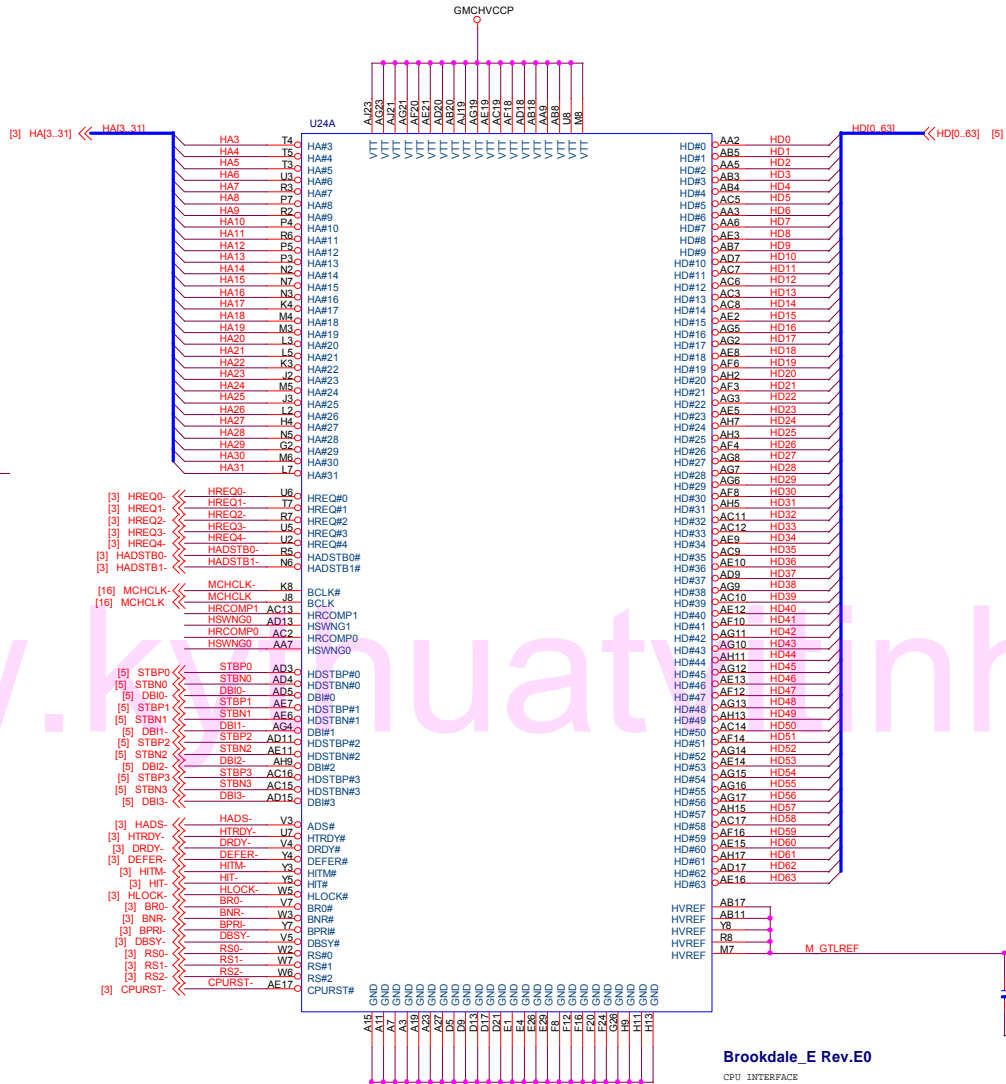
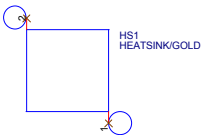
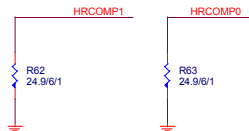
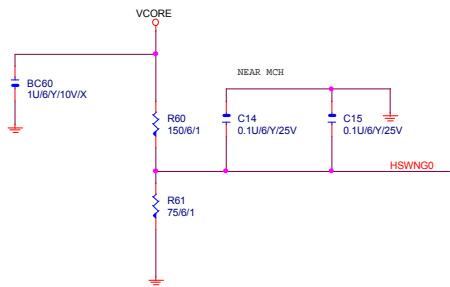


Title			WILLIAMATE 478A		
Size	Document Number				Rev
Custom	GA-8IE2004				1.0
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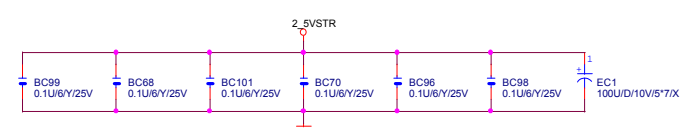
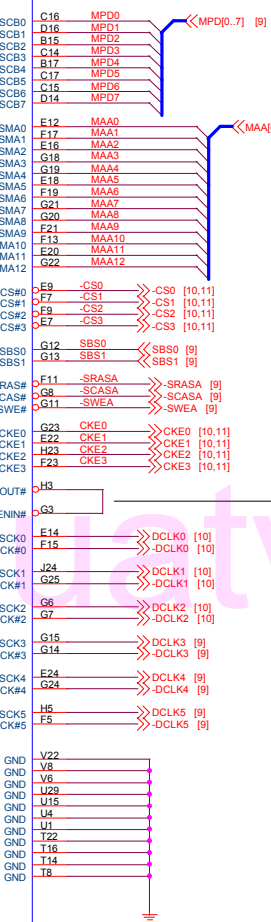
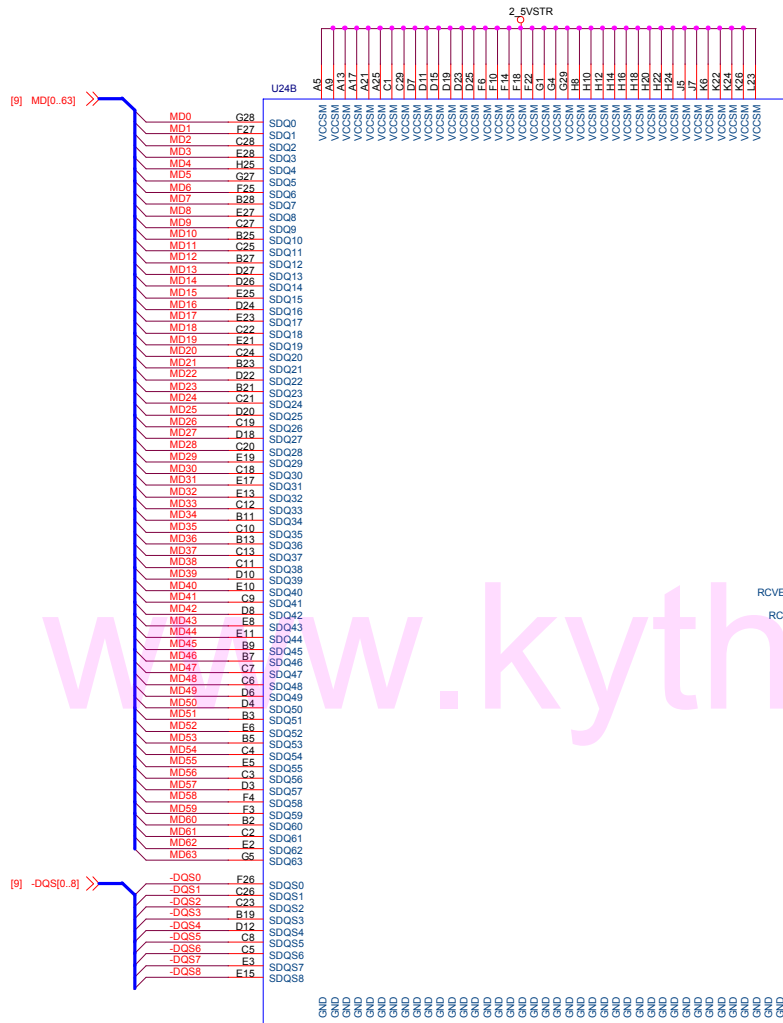


Title			WILLIAMATE 478C		
Size	Document Number			Rev	1.0
Custom	GA-8IE2004				
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Brookdale\_E Rev.E0  
CPU INTERFACE

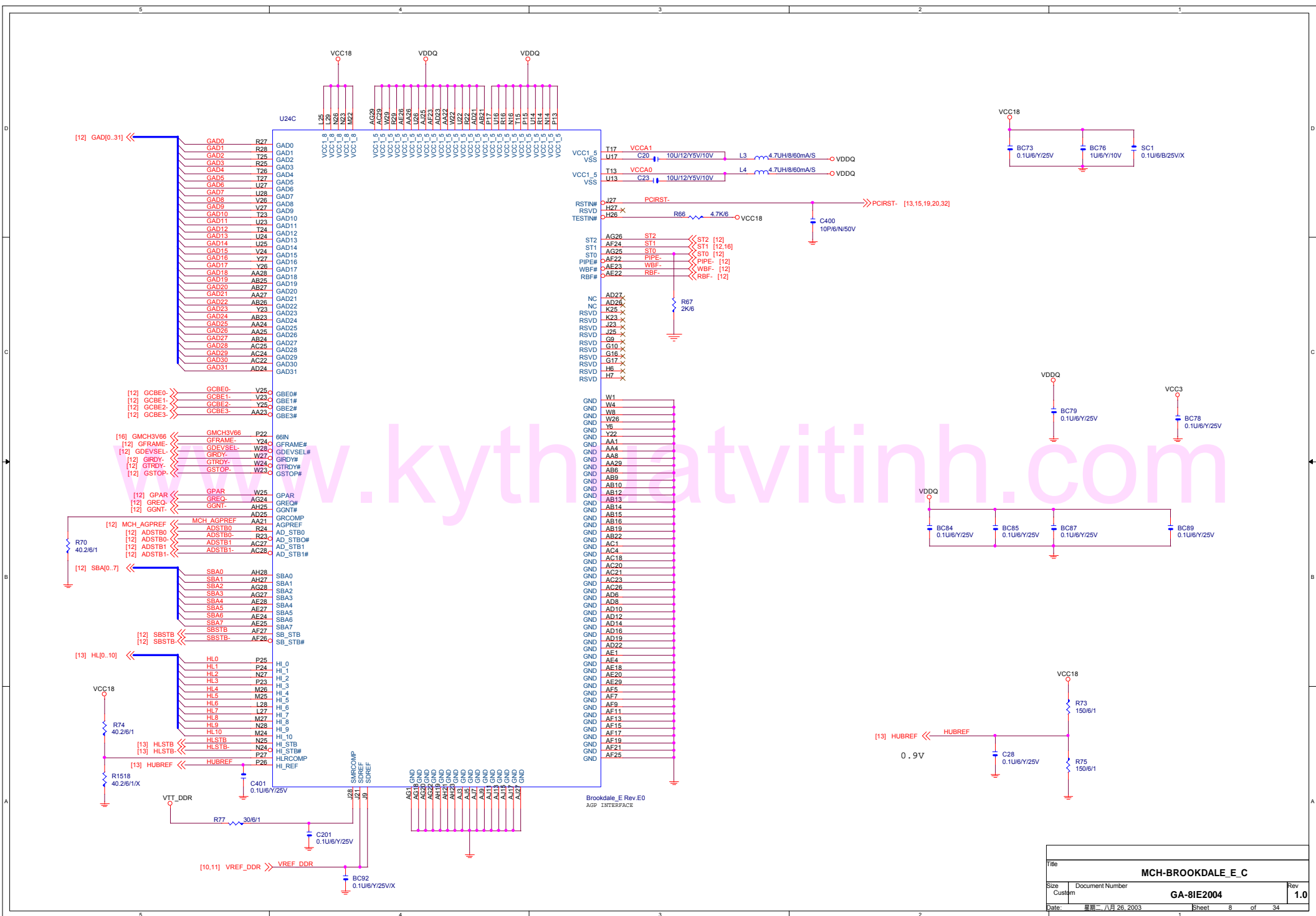
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MCH-BROOKDALE_E_A		
Size	Document Number	Rev
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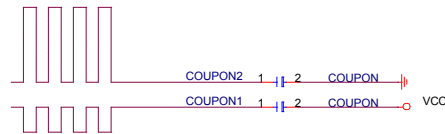
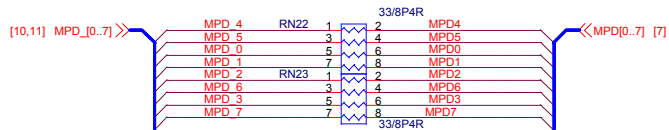
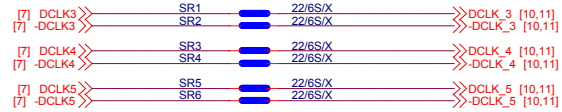
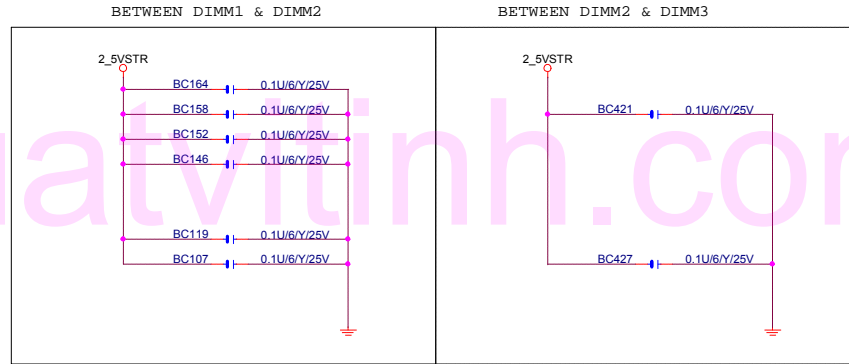
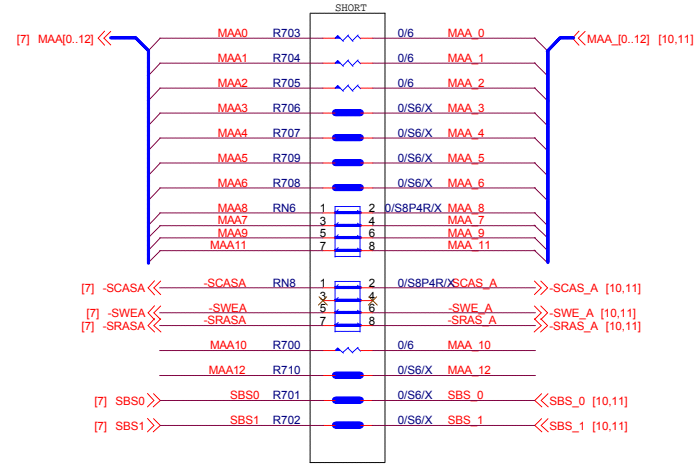
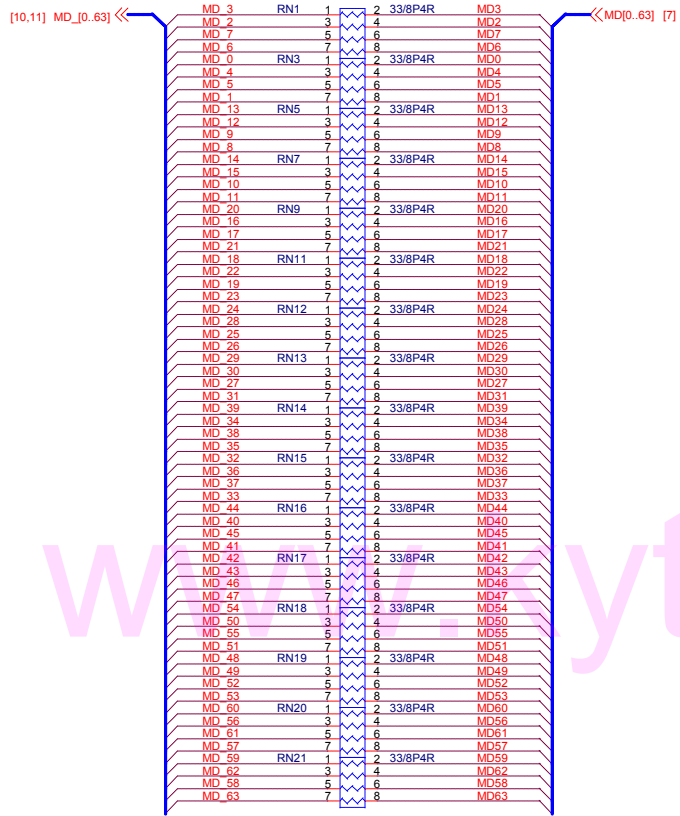
注意:DDR版要在SOLDER SIDE  
LAY 1 INCH 長度(5MIL)

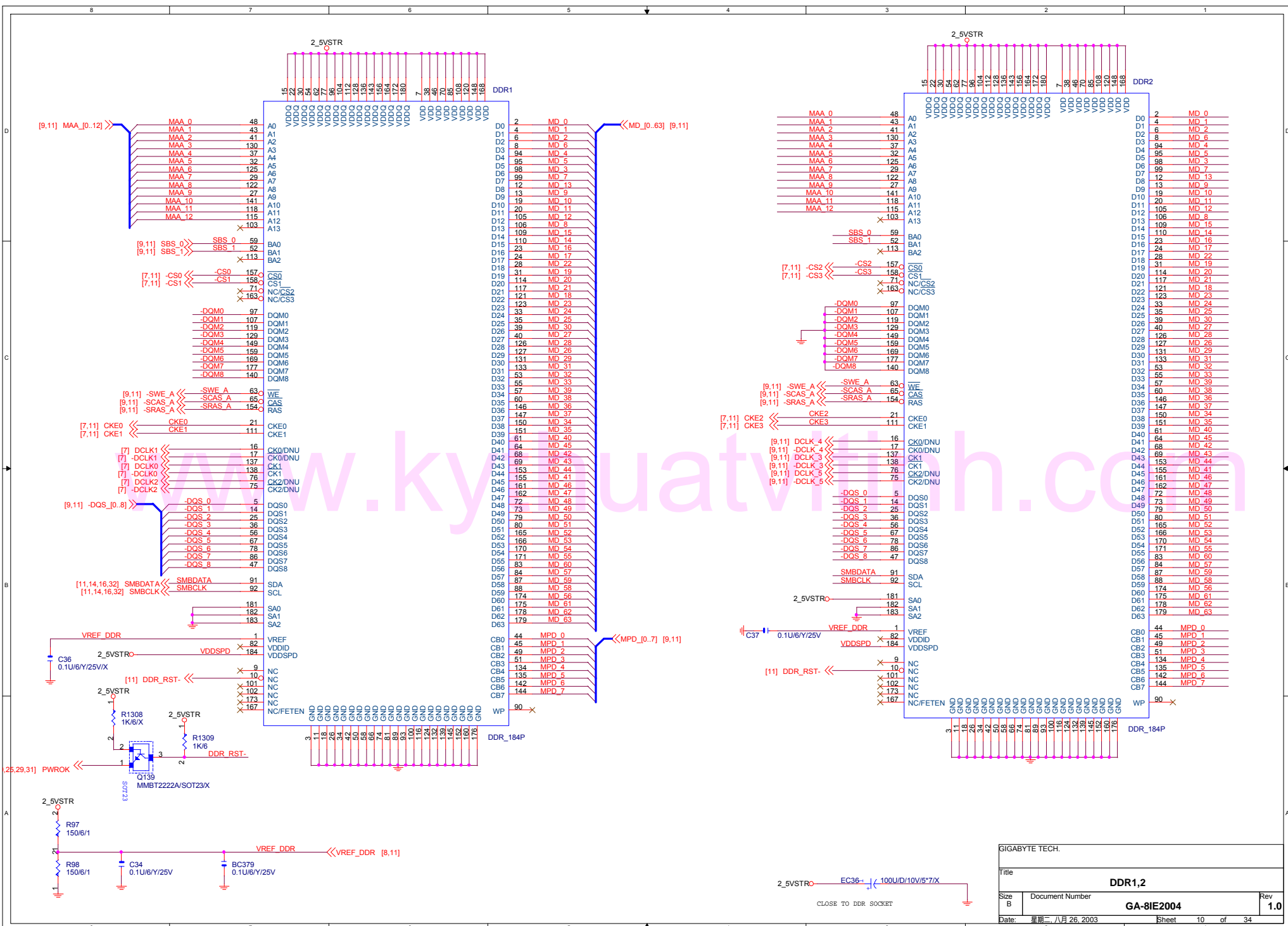
Brookdale\_E Rev.E0  
DDR INTERFACE

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Size	Document Number	Rev			1.0
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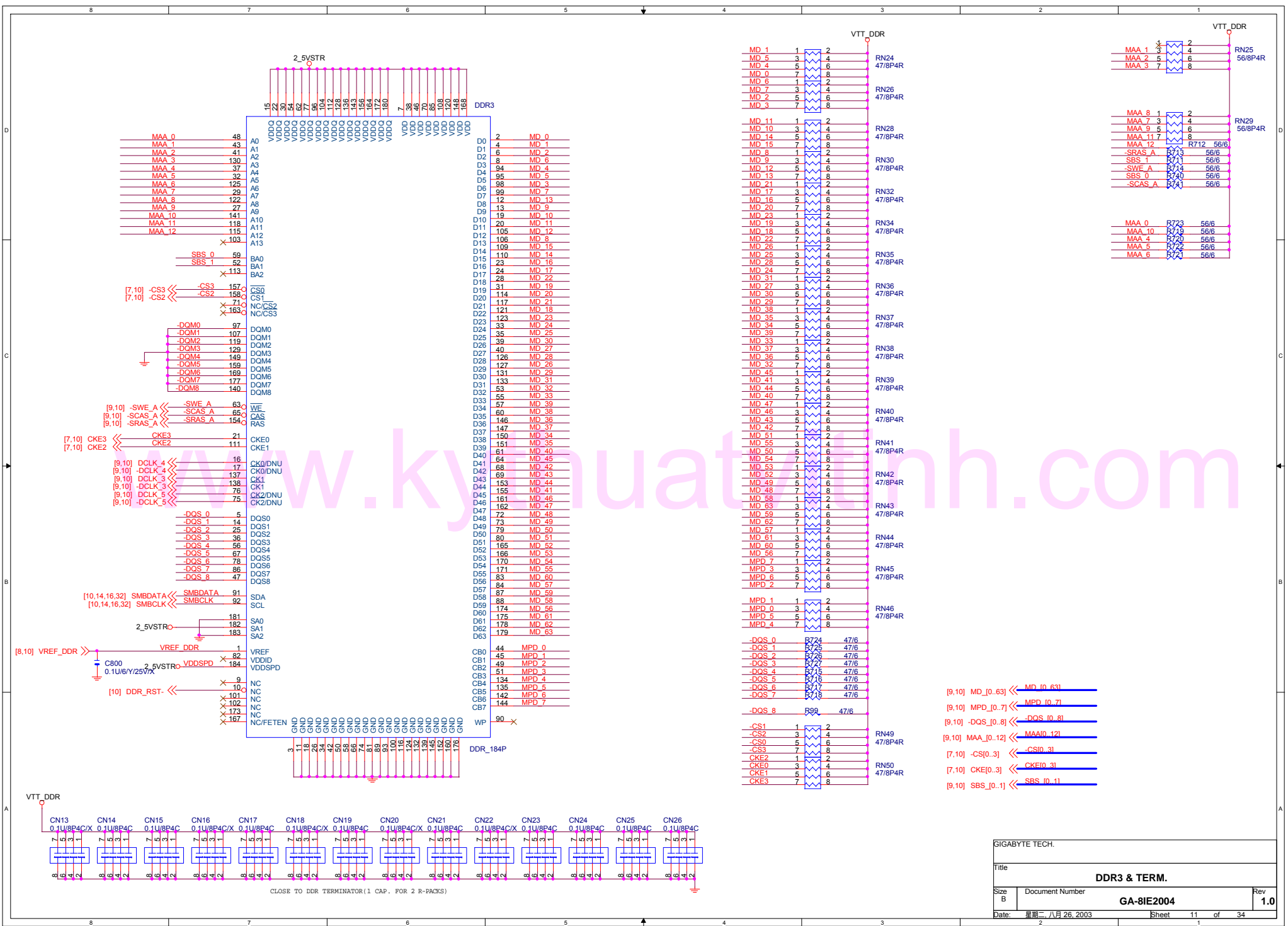


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Size	Document Number	Rev
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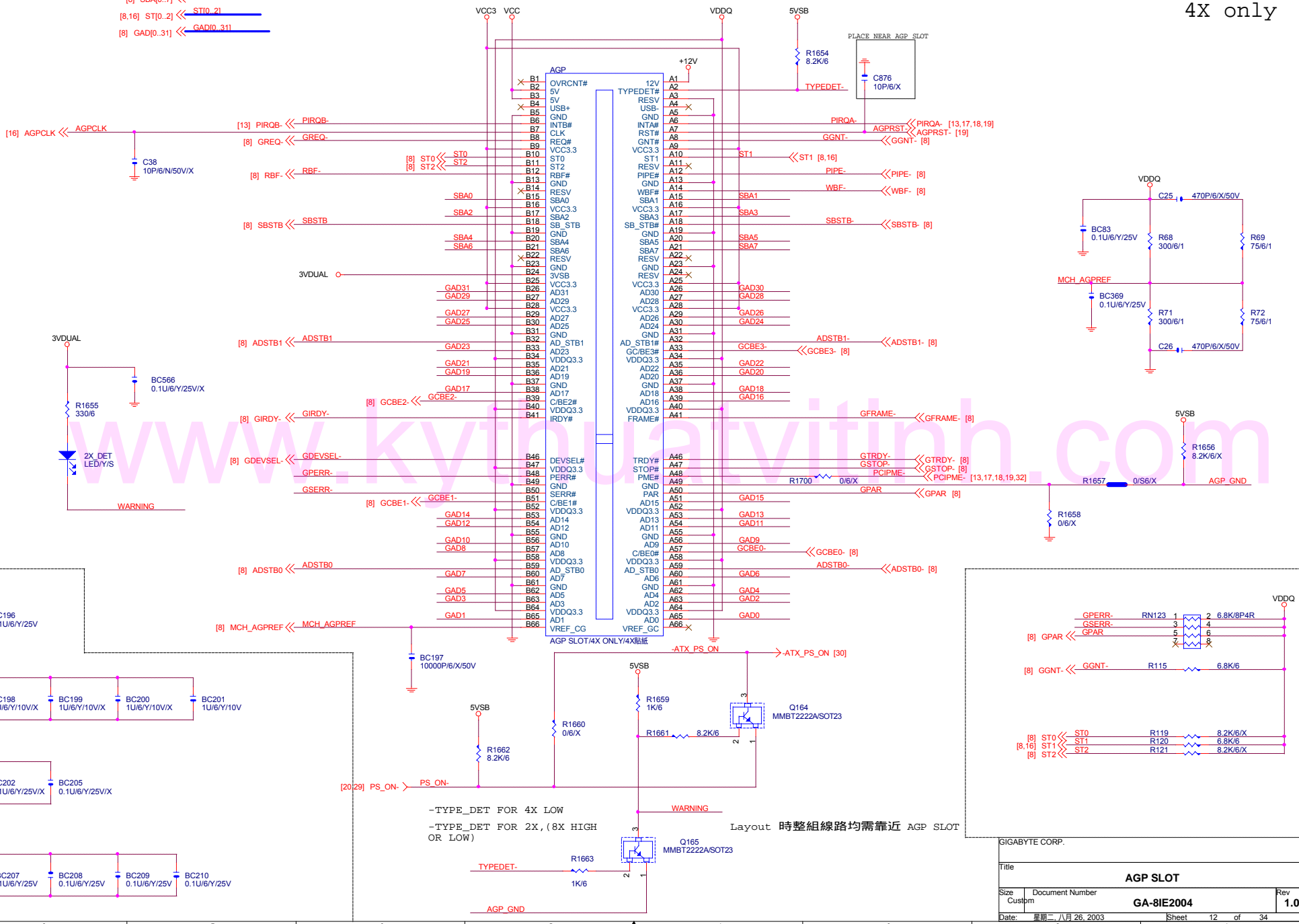
GIGABYTE TECH.		
Title		
<b>DDR1,2</b>		
Size	Document Number	Rev
B	<b>GA-8IE2004</b>	<b>1.0</b>
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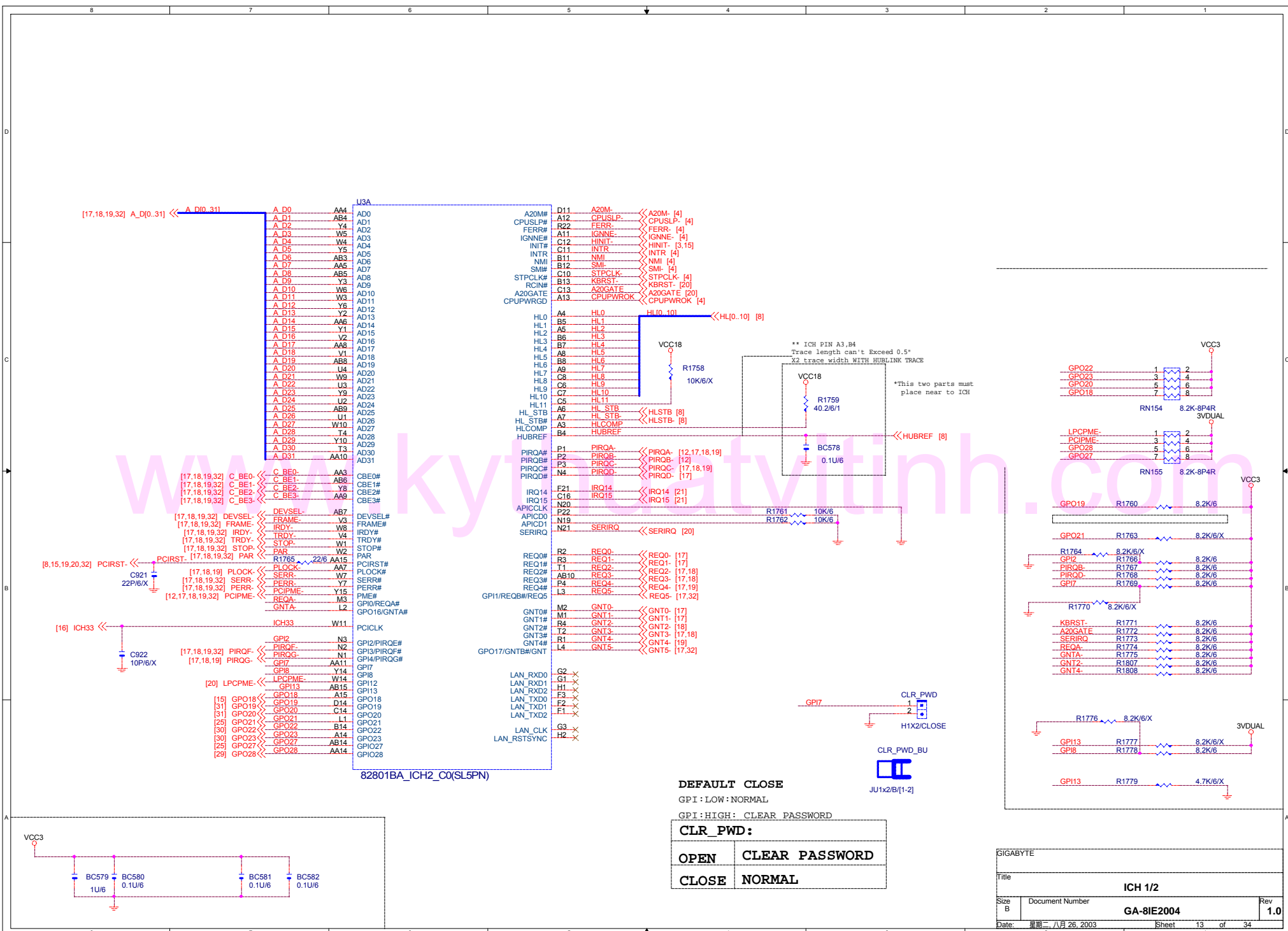


GIGABYTE TECH.		
Title		
<b>DDR3 &amp; TERM.</b>		
Size	Document Number	Rev
B	<b>GA-8IE2004</b>	<b>1.0</b>
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4X only

[8] SBA[0..7] << SBA[0..7]  
[8,16] ST[0..2] << ST[0..2]  
[8] GAD[0..31] << GAD[0..31]

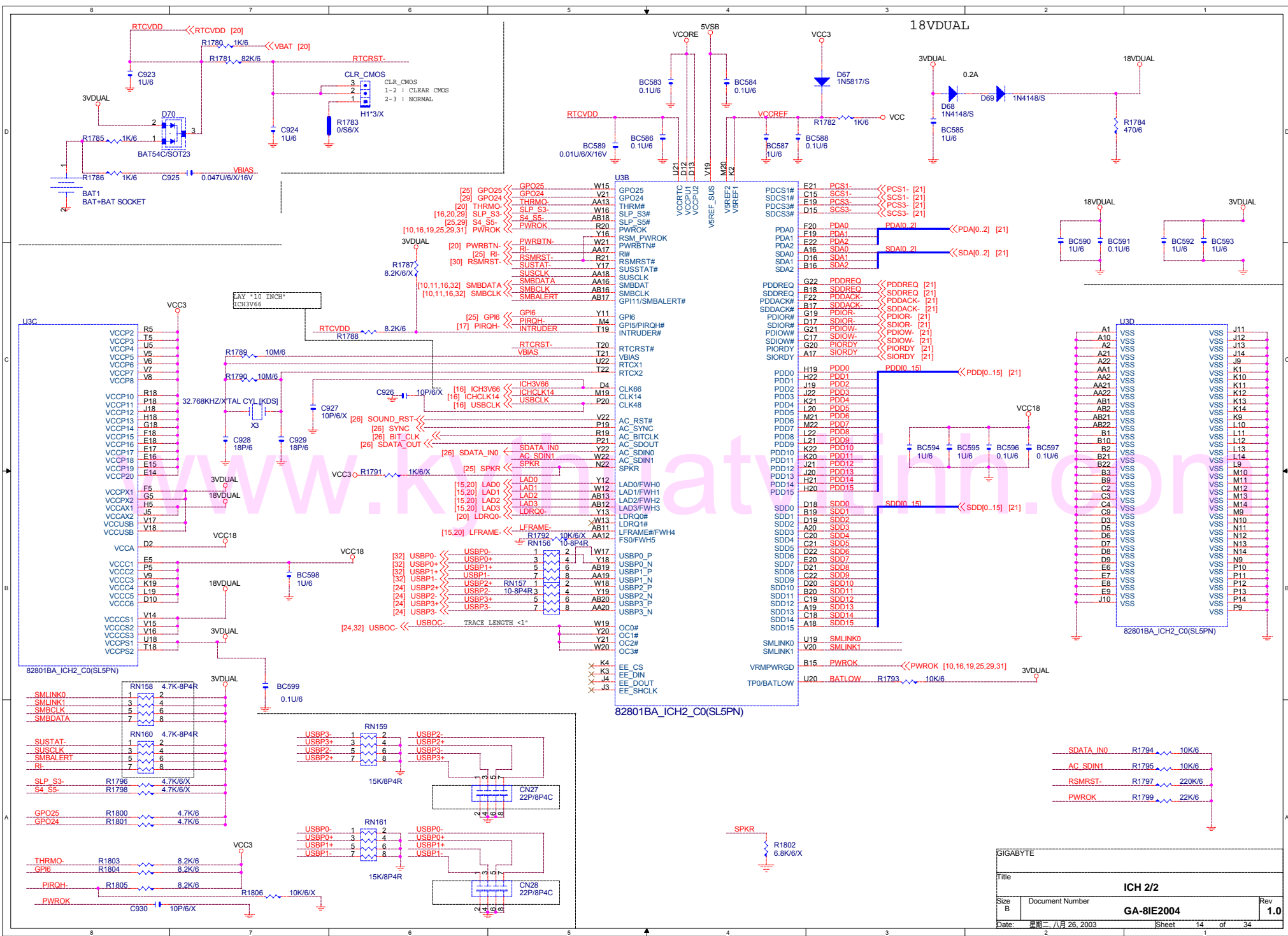




**DEFAULT CLOSE**  
 GPI : LOW : NORMAL  
 GPI : HIGH : CLEAR PASSWORD

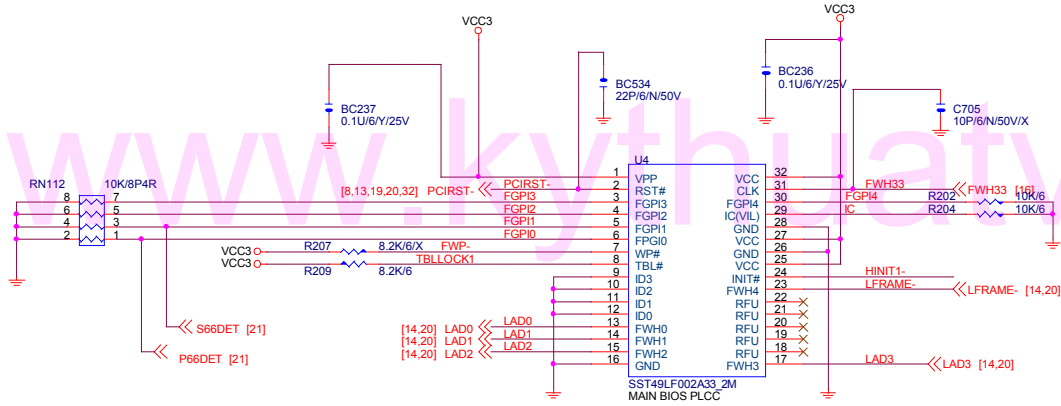
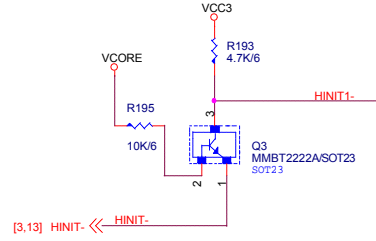
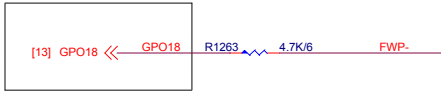
<b>CLR_PWD :</b>	
OPEN	CLEAR PASSWORD
CLOSE	NORMAL

GIGABYTE		
Title ICH 1/2		
Size B	Document Number GA-8IE2004	Rev 1.0
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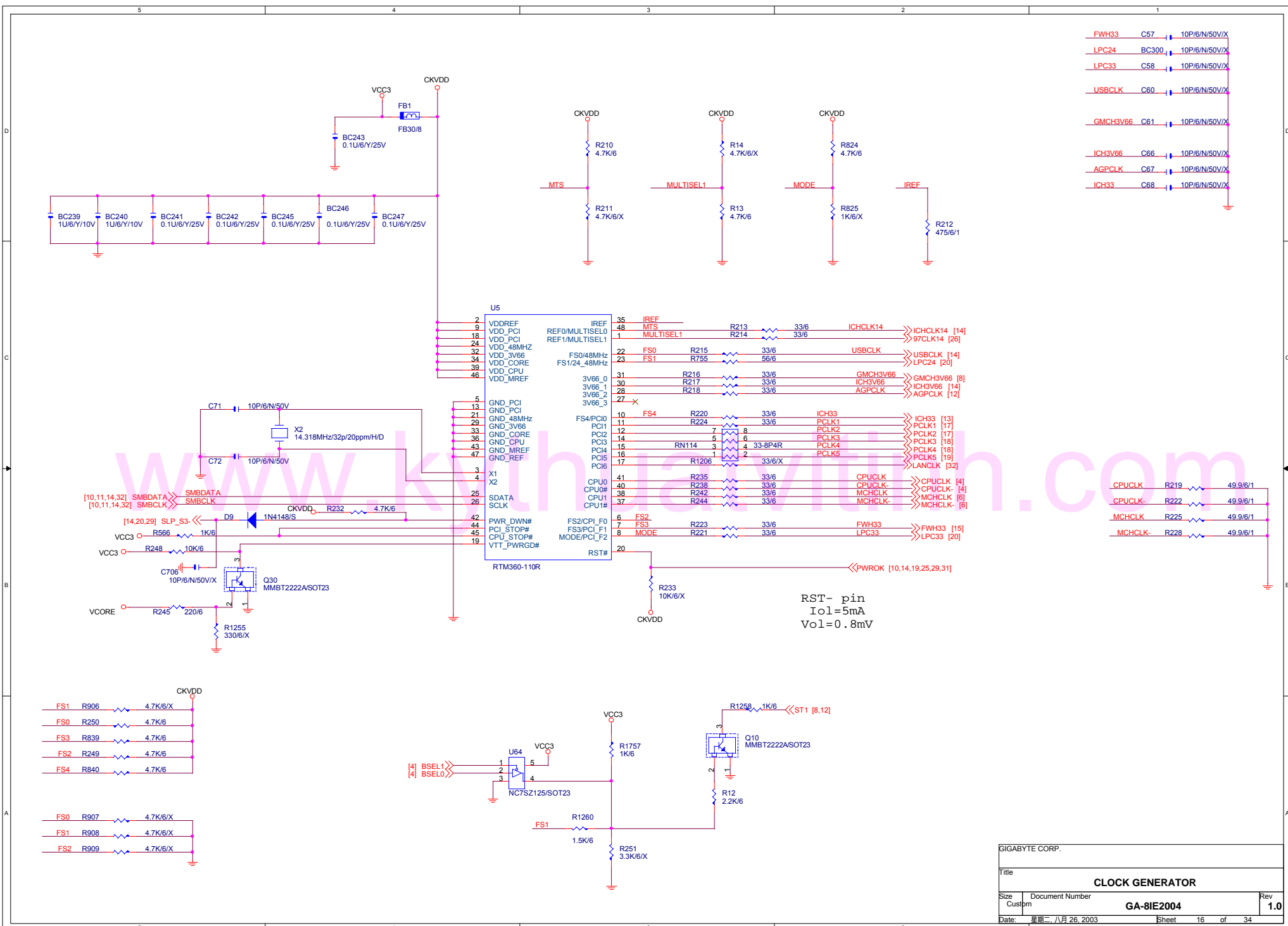


GIGABYTE	
Title	
ICH 2/2	
Size	Document Number
B	GA-8IE2004
Date:	Rev
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14	34

2002/04/15 MODIFY WRITE PROTECT

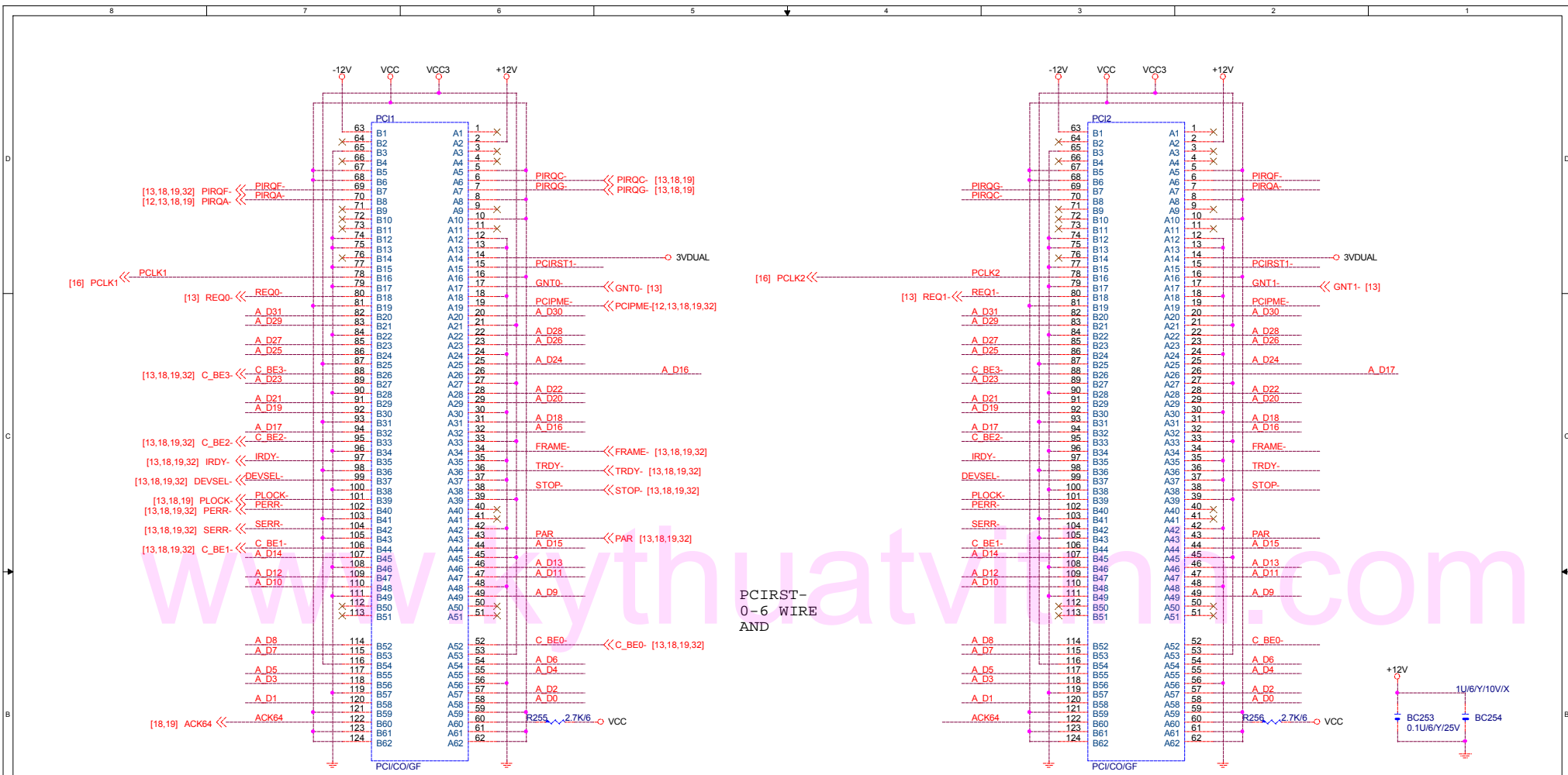


GIGABYTE CORP.		
Title		
FWH		
Size B	Document Number	Rev
	GA-8IE2004	1.0
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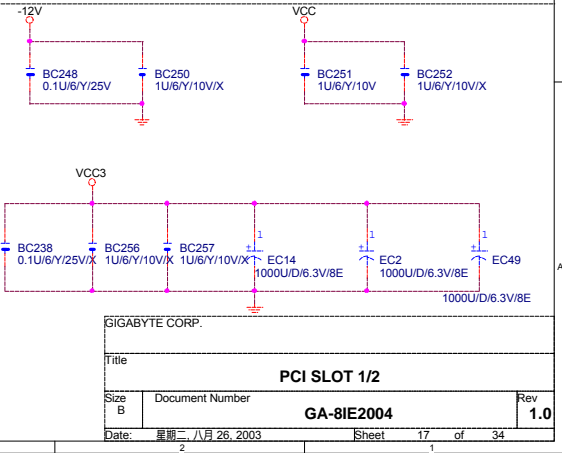
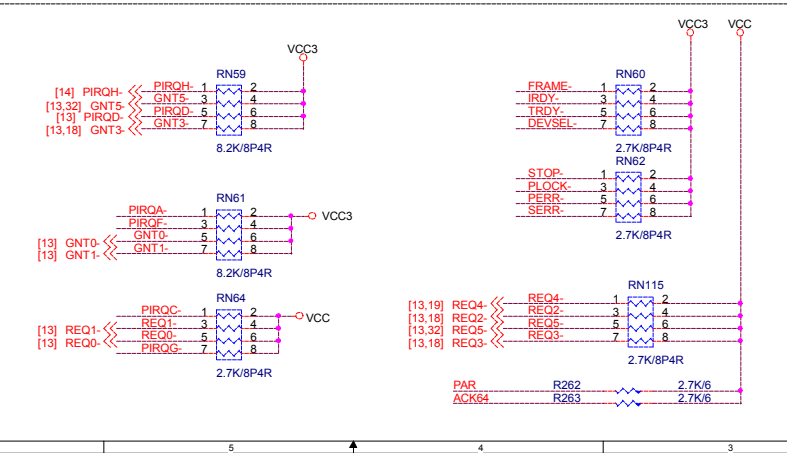
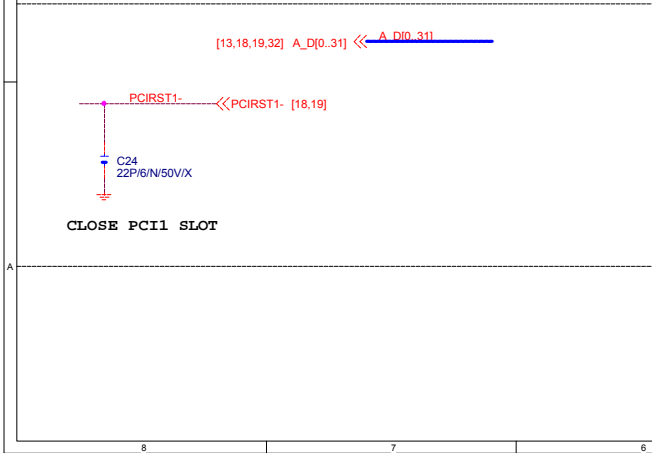


RST- pin  
 $I_{ol}=5mA$   
 $V_{ol}=0.8mV$

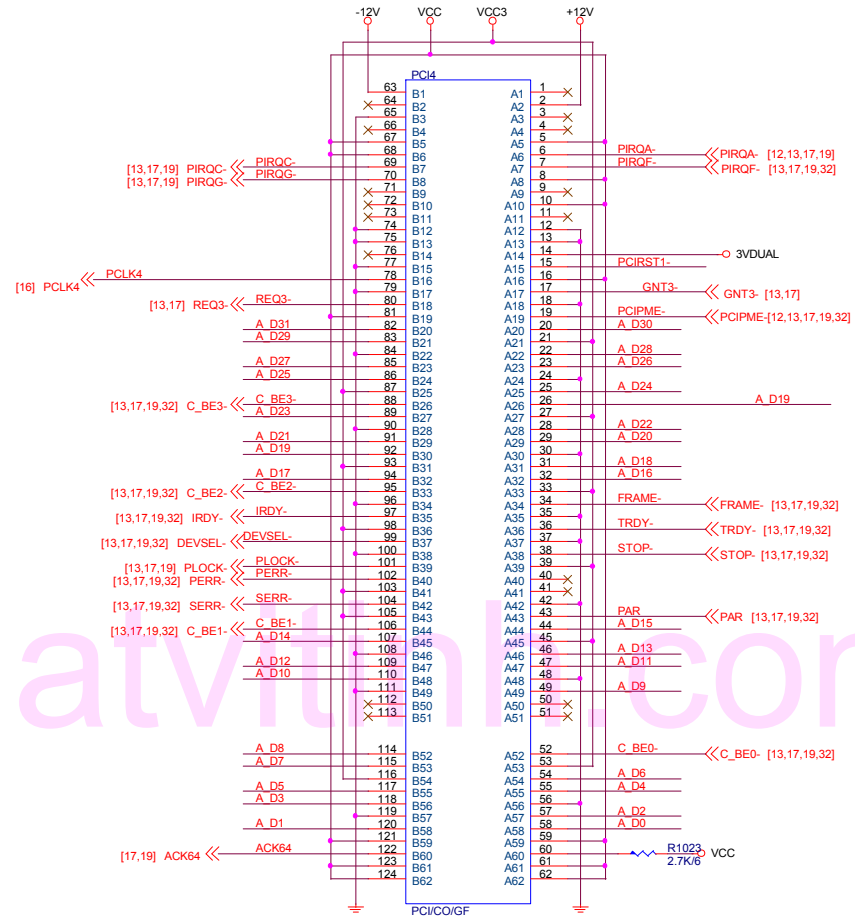
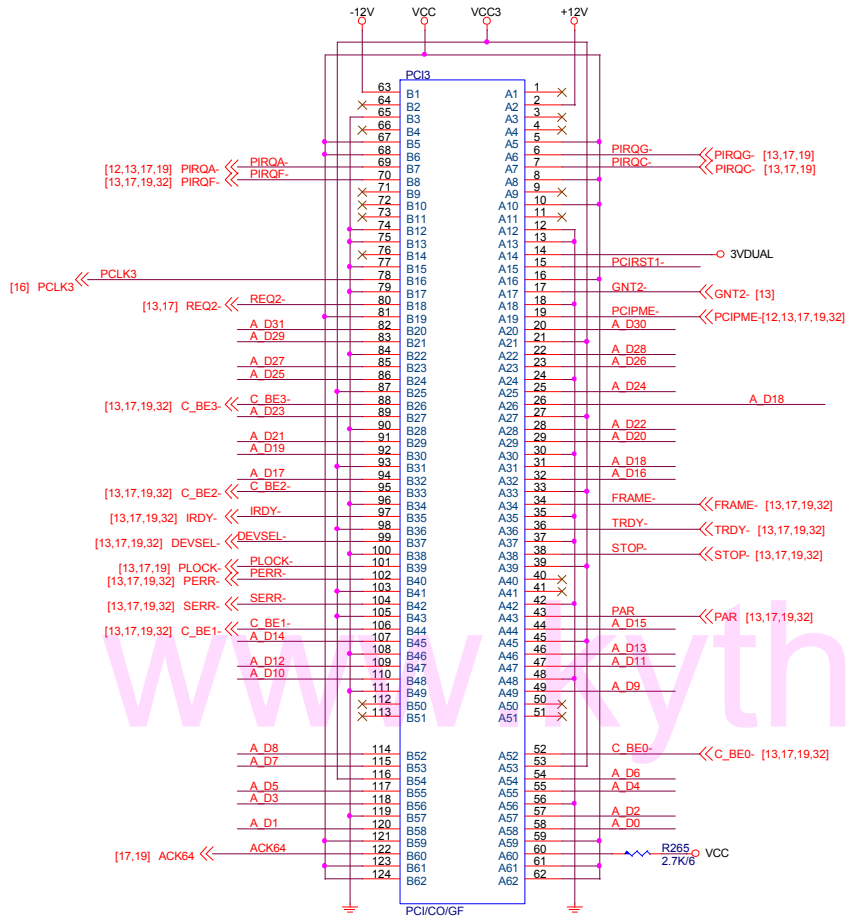
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Title			
<b>CLOCK GENERATOR</b>			
Size	Document Number		Rev
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PCIRST-0-6 WIRE AND

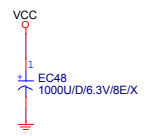


GIGABYTE CORP.		
Title <b>PCI SLOT 1/2</b>		
Size B	Document Number <b>GA-8IE2004</b>	Rev <b>1.0</b>
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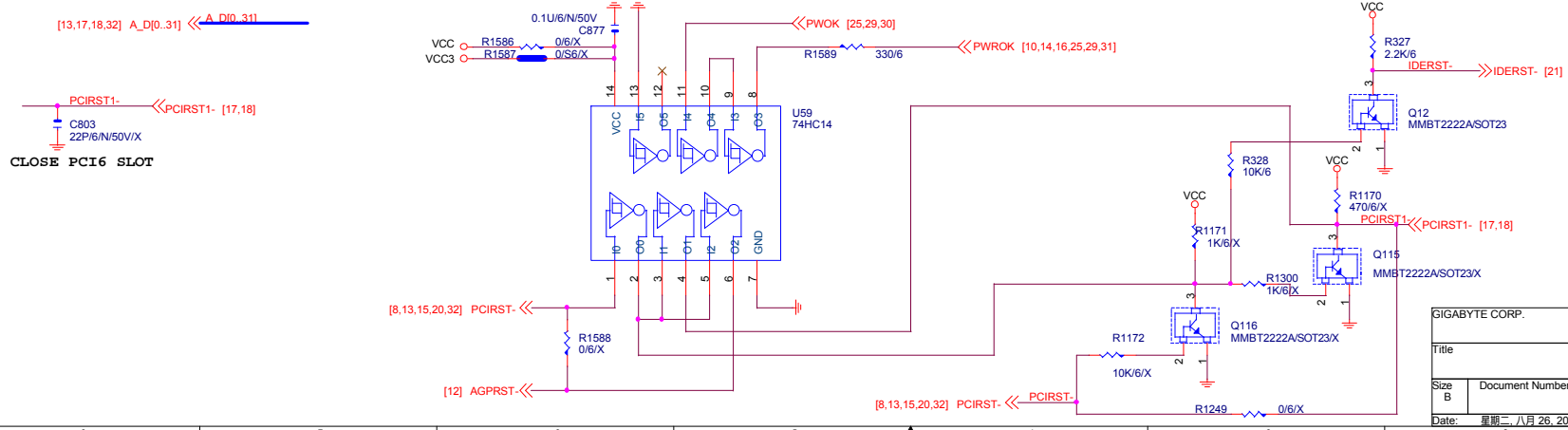
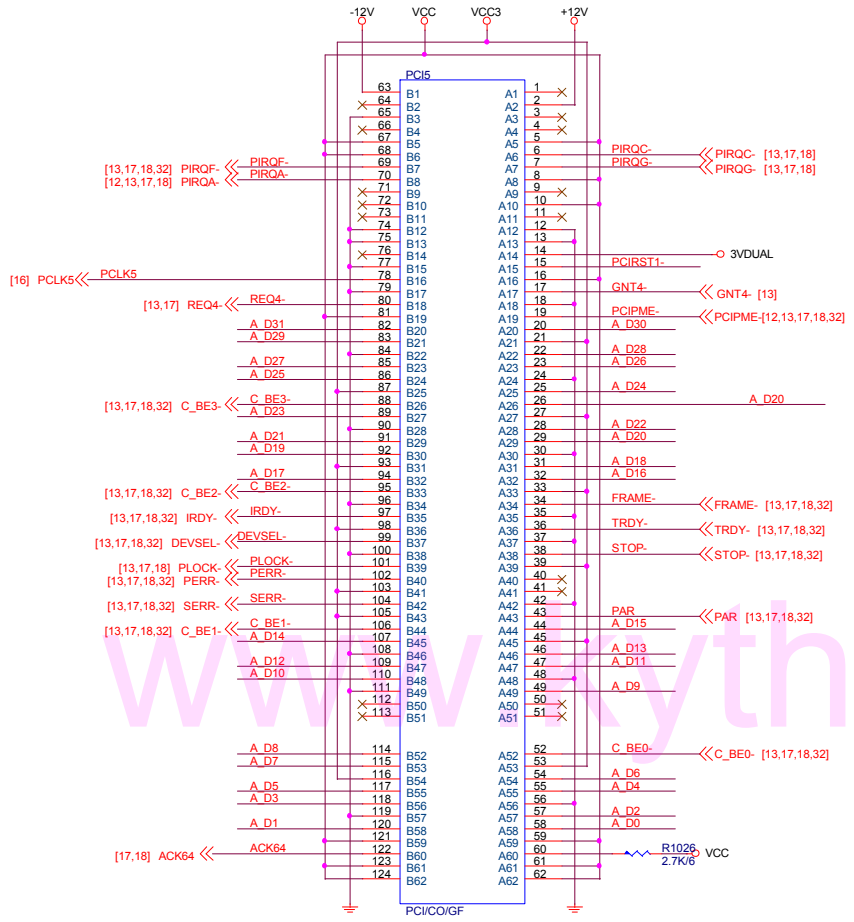


[13,17,19,32] A\_D0..A31 << A\_D0..A31

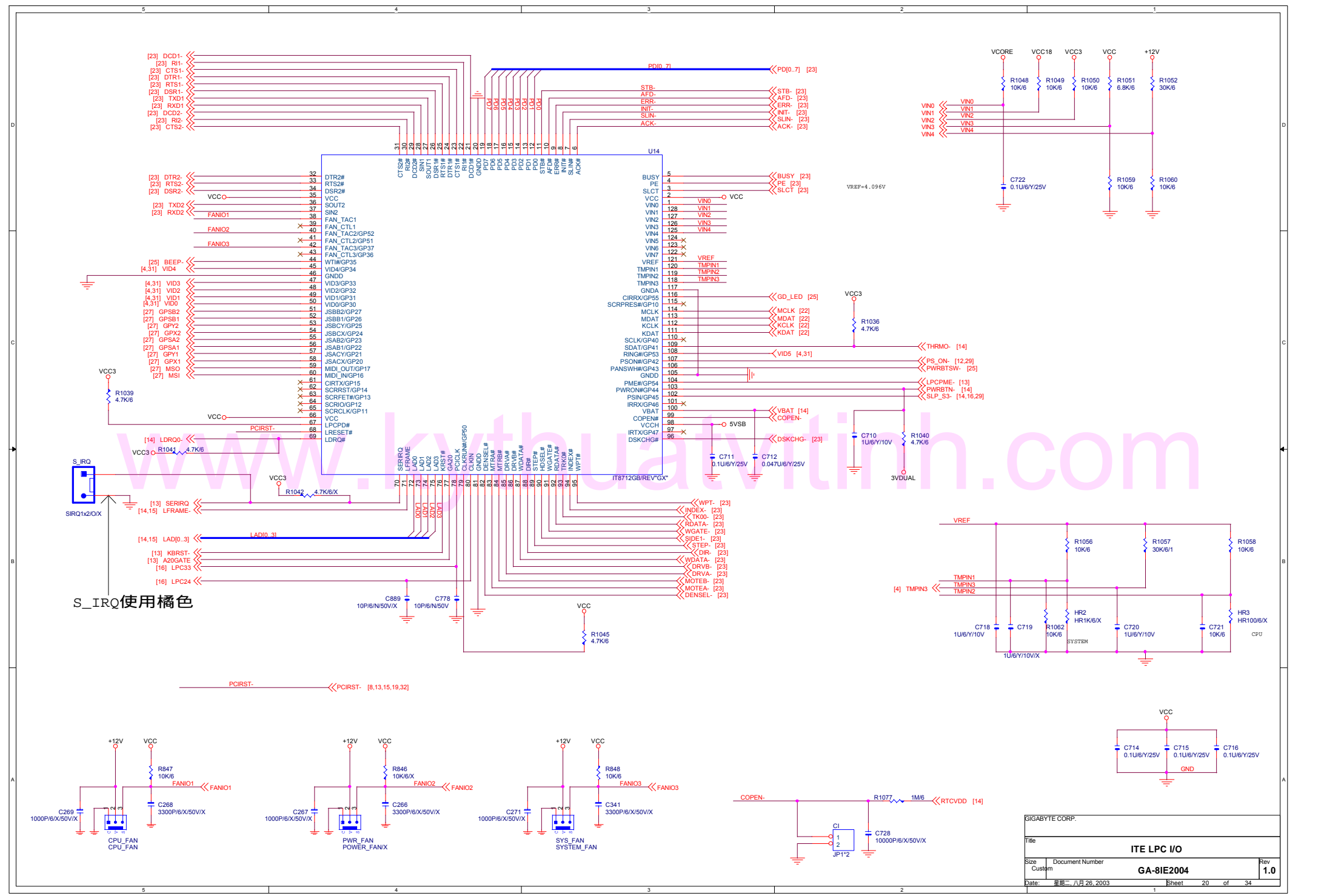
PCIRST1- << PCIRST1- [17,19]



GIGABYTE CORP.		
Title <b>PCI SLOT 3_4</b>		
Size B	Document Number <b>GA-8IE2004</b>	Rev <b>1.0</b>
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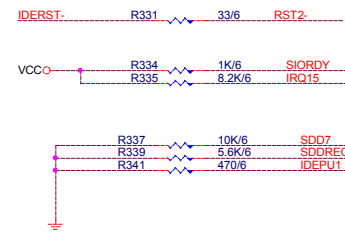
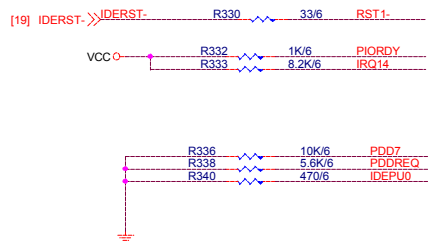
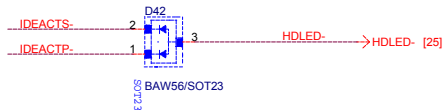


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Title <b>PCI SLOT 5</b>		
Size B	Document Number <b>GA-8IE2004</b>	Rev <b>1.0</b>
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S\_IRQ使用橘色

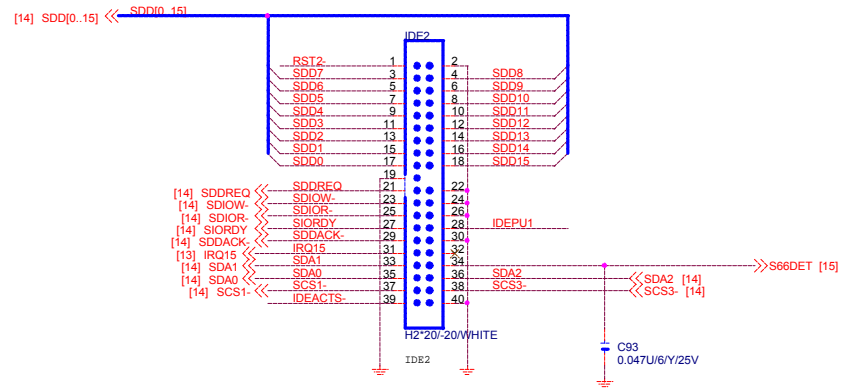
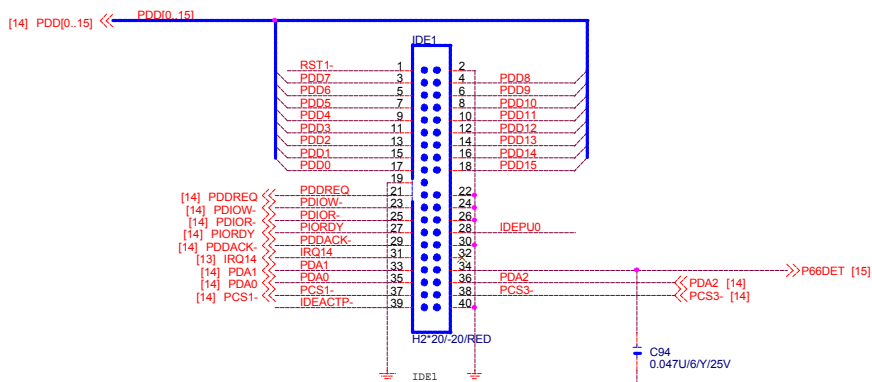
SIBGABYTE CORP.		
File		
<b>ITE LPC I/O</b>		
Size	Document Number	Rev
Custom	<b>GA-8IE2004</b>	<b>1.0</b>
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PRIMARY IDE CONNECTOR

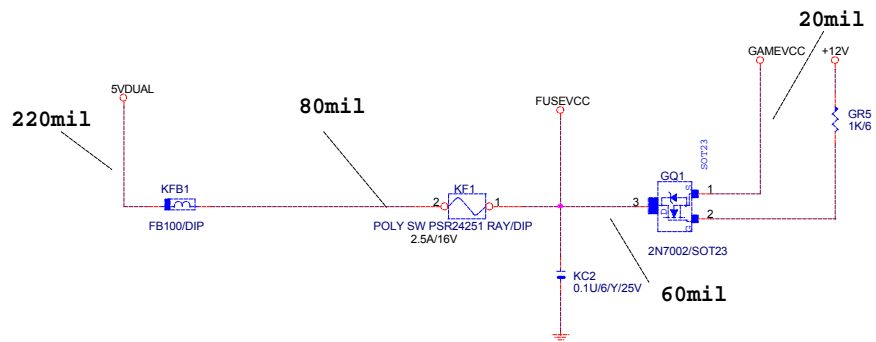
SECONDARY IDE CONNECTOR



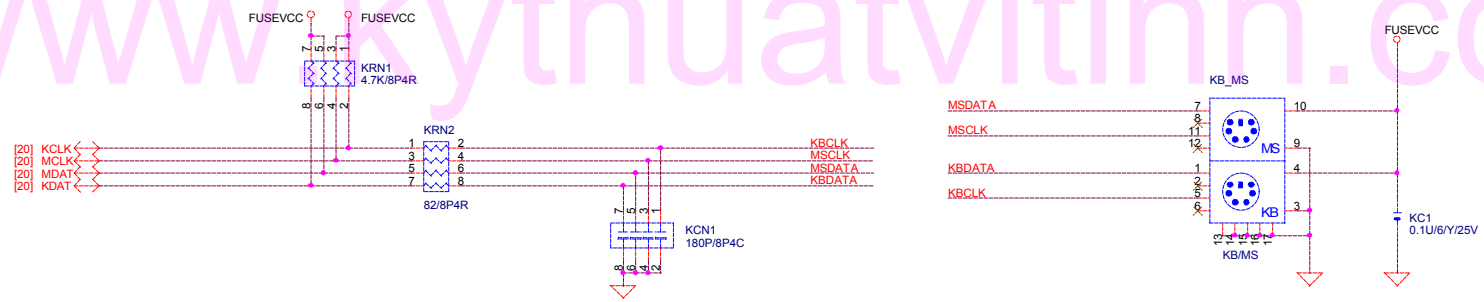
BIOS:CABLE DETECT AND DEVICE DETECT

GIGABYTE CORP.		
Title <b>IDE CONNECTOR</b>		
Size B	Document Number <b>GA-8IE2004</b>	Rev <b>1.0</b>
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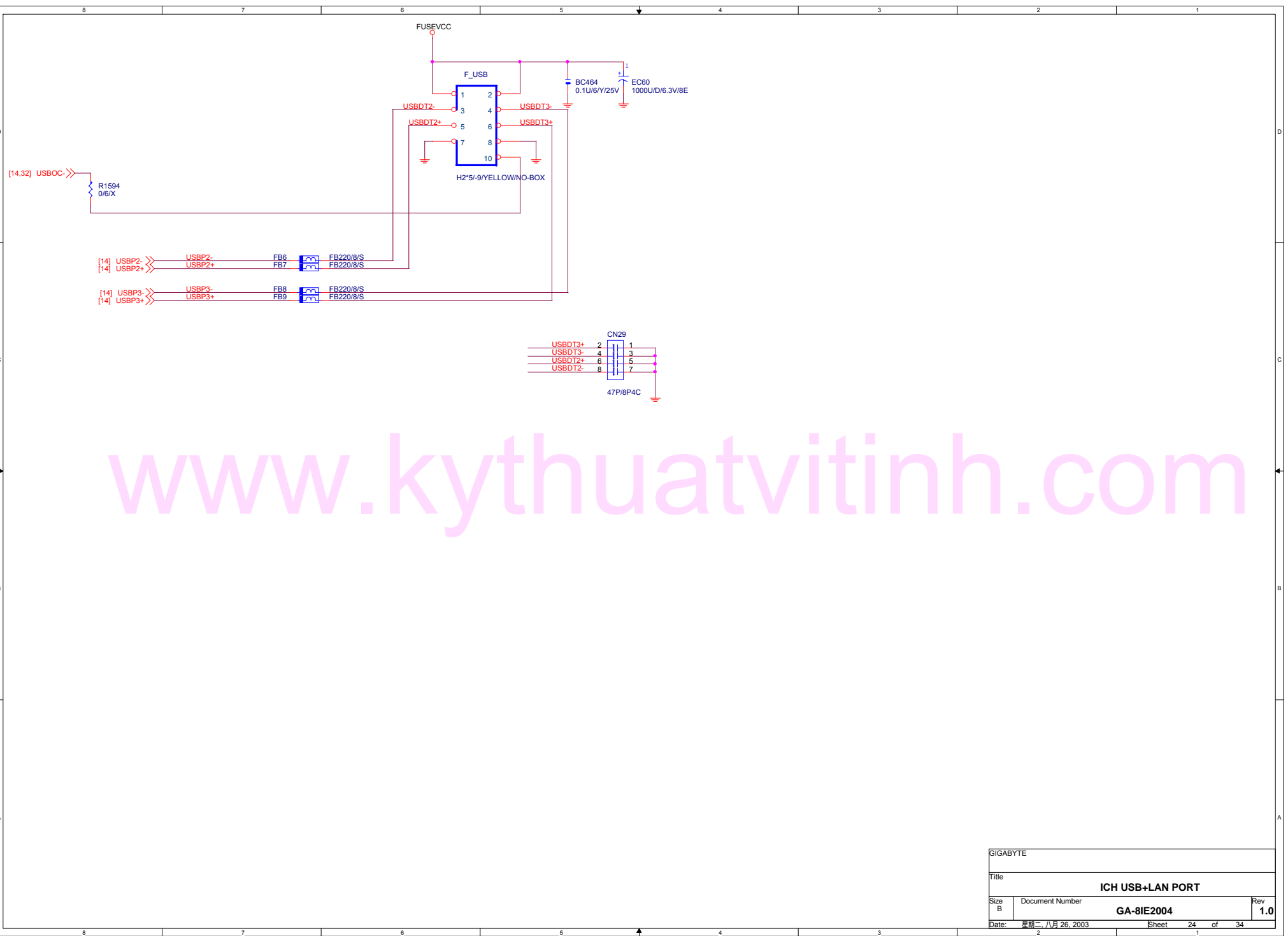
模組化線路



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www.kythuatvithinh.com

GIGABYTE			
Title			
<b>ICH USB+LAN PORT</b>			
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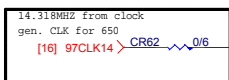


# 模組化線路

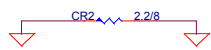
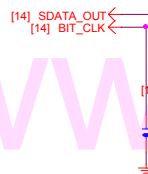
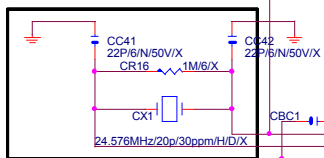
## Filter Cap design:

	Pin-29	Pin-30	Pin-31	Pin-32
ALC655 Rev D	1000pf	1000pf	1uf	Front-MIC2
ALC655 Rev C	1000pf	1000pf	1uf	X
ALC658	X	X	JD4	X
ALC650	1000pf	1000pf	1uf	1uf

FOR 650 DESIGN DEFAULT 由 CLOCK GEN來



FOR 650 DESIGN DEFAULT 不上CRYSTAL



FOR EMI

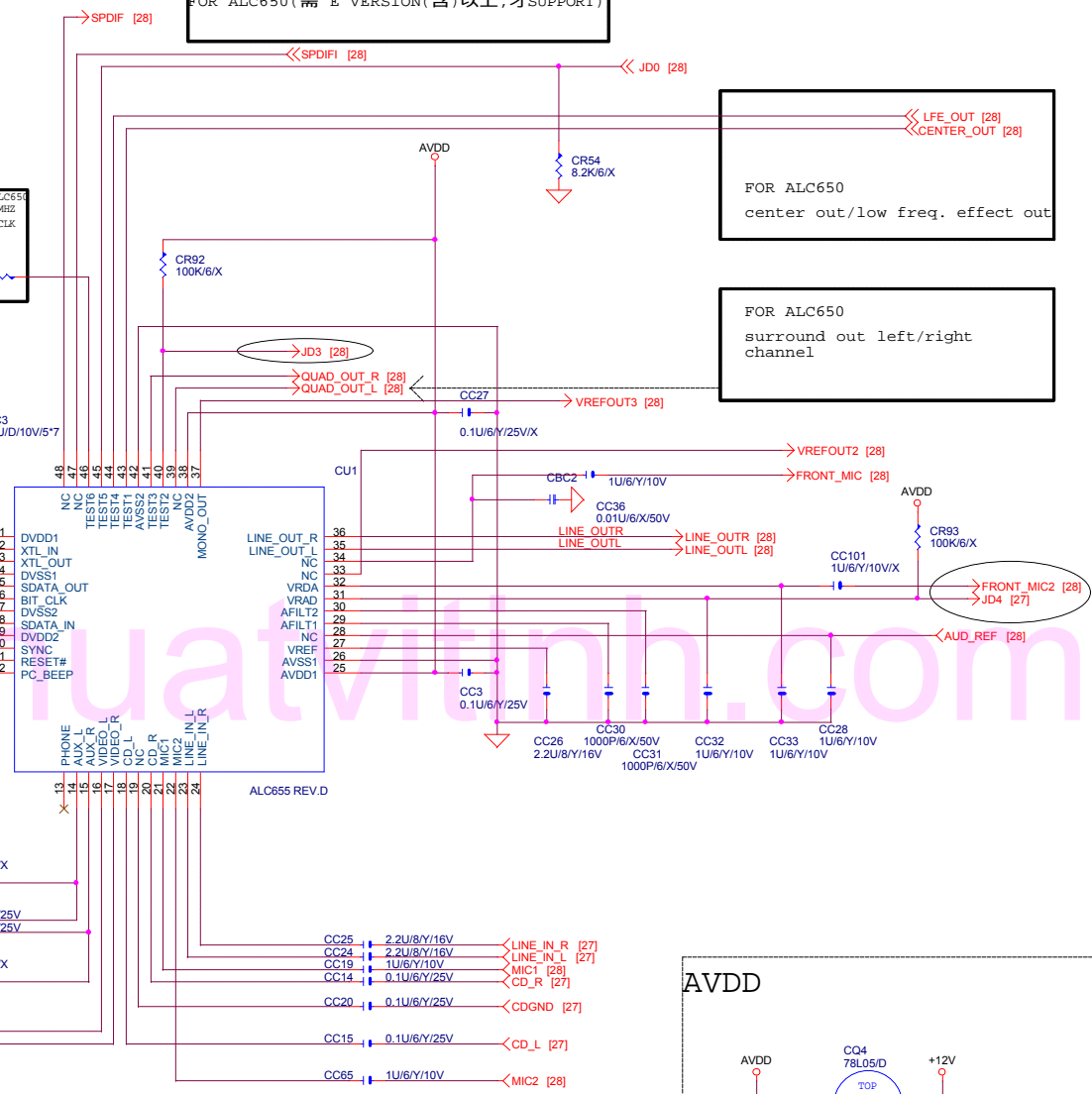
## Place In Between COM & AUDIO

## Arrangement of Jack detection Pin:

	Pin-45 (JD0)	Pin-17 (JD1)	Pin-16 (JD2)	Pin-40 (JD3)	Pin-31 (JD4)
ALC655	for MIC-IN	for FRONT-OUT	for LINE-IN		
ALC658	for MIC-IN	for UAJ1	for UAJ2	for FRONT-OUT	for LINE-IN External pull high is needed

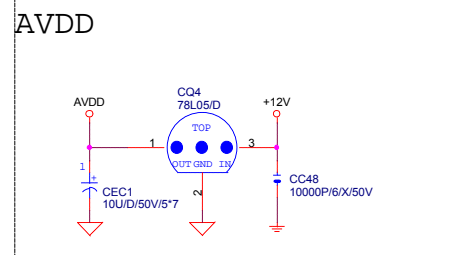
FOR ALC650 (需 E VERSION(含)以上,才SUPPORT)

Support ALC655  
If 14.318MHz external CLK is used

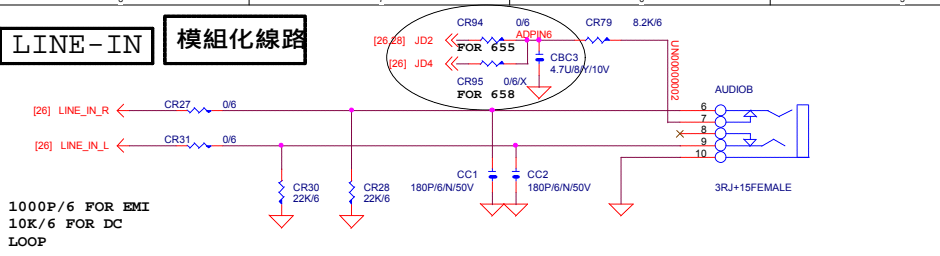


FOR ALC650  
center out/low freq. effect out

FOR ALC650  
surround out left/right channel



**LINE-IN 模組化線路**

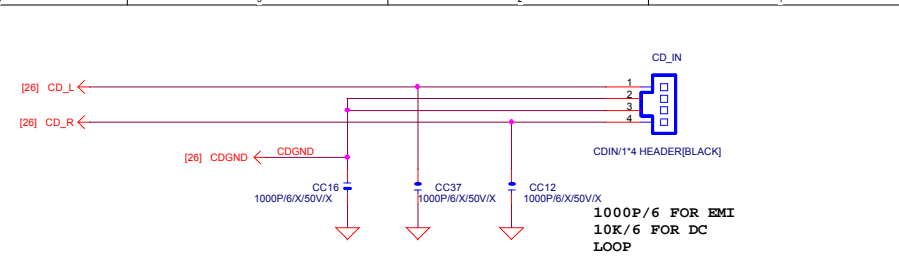


1000P/6 FOR EMI  
10K/6 FOR DC LOOP

LINE IN SENSING(當OUTPUT)  
R>4K OHM=>POWER SPEAKER  
4K OHM>R>400 OHM=>MICROPHONE  
R<400 OHM=>HEADPHONE

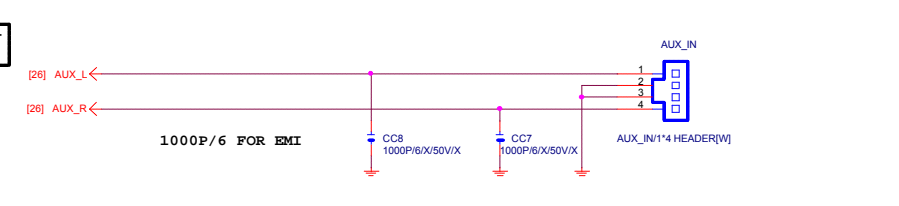
LINE IN SENSING(當INPUT)  
swing of input signal>-40dbv(10mv)==>line in device active  
swing of input signal<-40dbv(10mv)==>unknown line in device

**CDIN**



1000P/6 FOR EMI  
10K/6 FOR DC LOOP

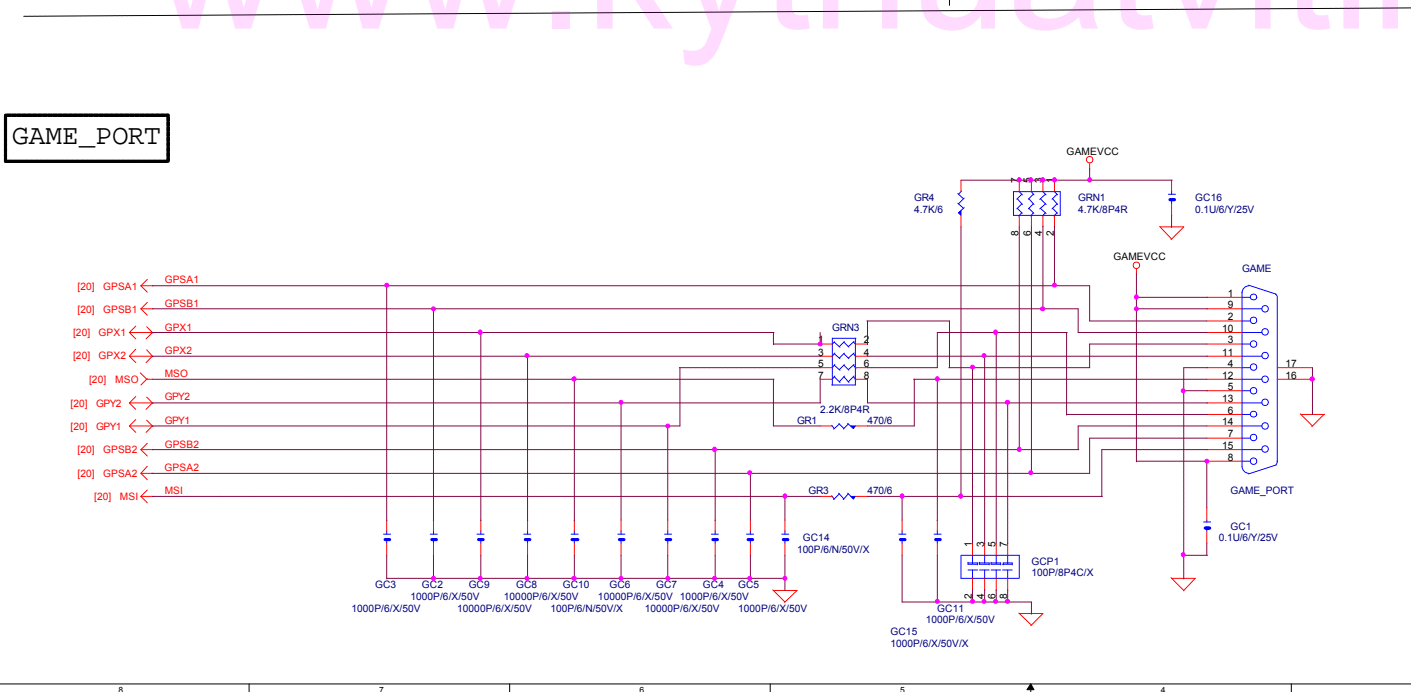
**AUX\_IN**



1000P/6 FOR EMI

www.kythuatvith.com

**GAME\_PORT**

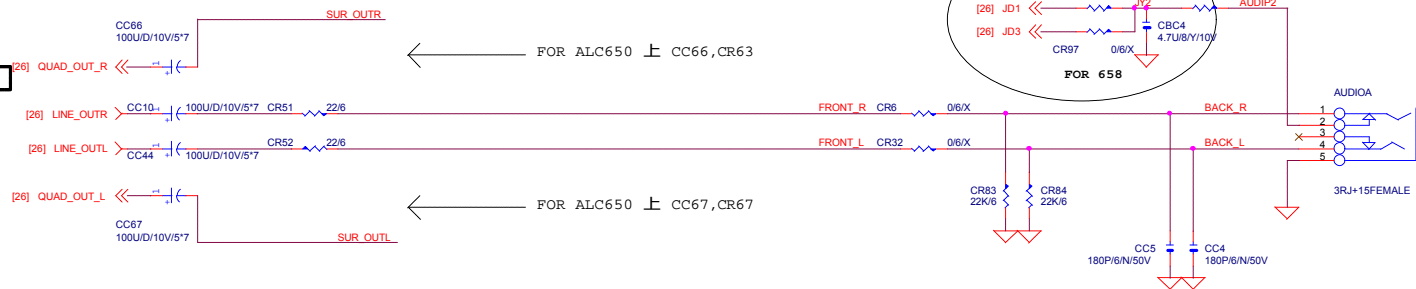


SISGABYTE CORP.		
Title		
<b>PHONE JACK, GAME PORT</b>		
Size	Document Number	Rev
Custom	<b>GA-8IE2004</b>	<b>1.0</b>
Date	日期: 八月 26, 2003	Sheet 27 of 34

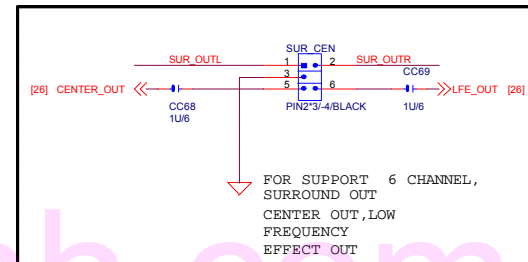
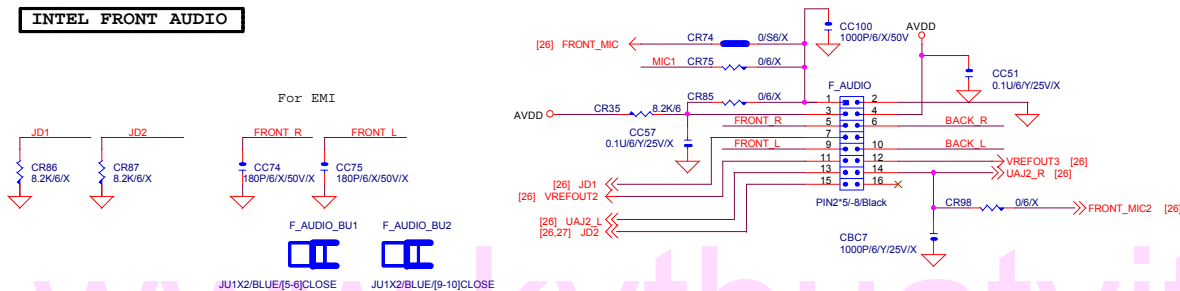
**模組化線路**

JDO,JD2,GPIO0 為偵測DEVICE INPUT 時由LOW TO HIGH Edge trigger(pop manual) 1/2(3.14)RC=1/2(3.14)8.2K\*4.7U=4.3HZ以上AC 信號全部衰減 TO 0V 不會造成JDO 誤動作(無device 時play wav)

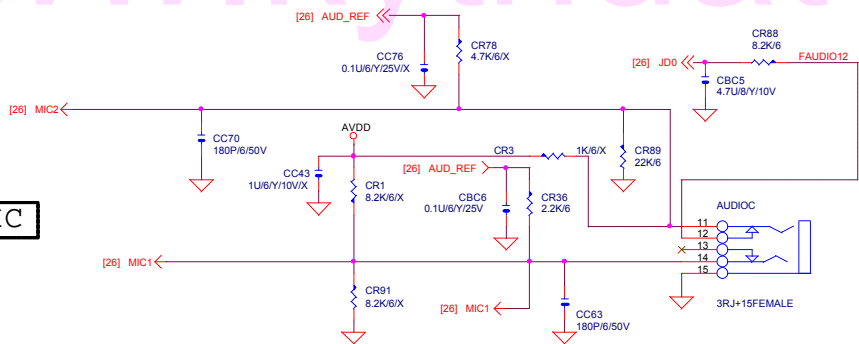
**LINE OUT**



**INTEL FRONT AUDIO**



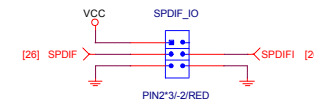
**MIC**



MICROPHONE IN SENSING(當INPUT)(利用vref 偏壓 與CR43,CR32 並聯求出阻抗)  
7.1k ohm>R>2.3k ohm==>microphone in  
R<2.3k ohm or R>7.1k ohm==>unknown device

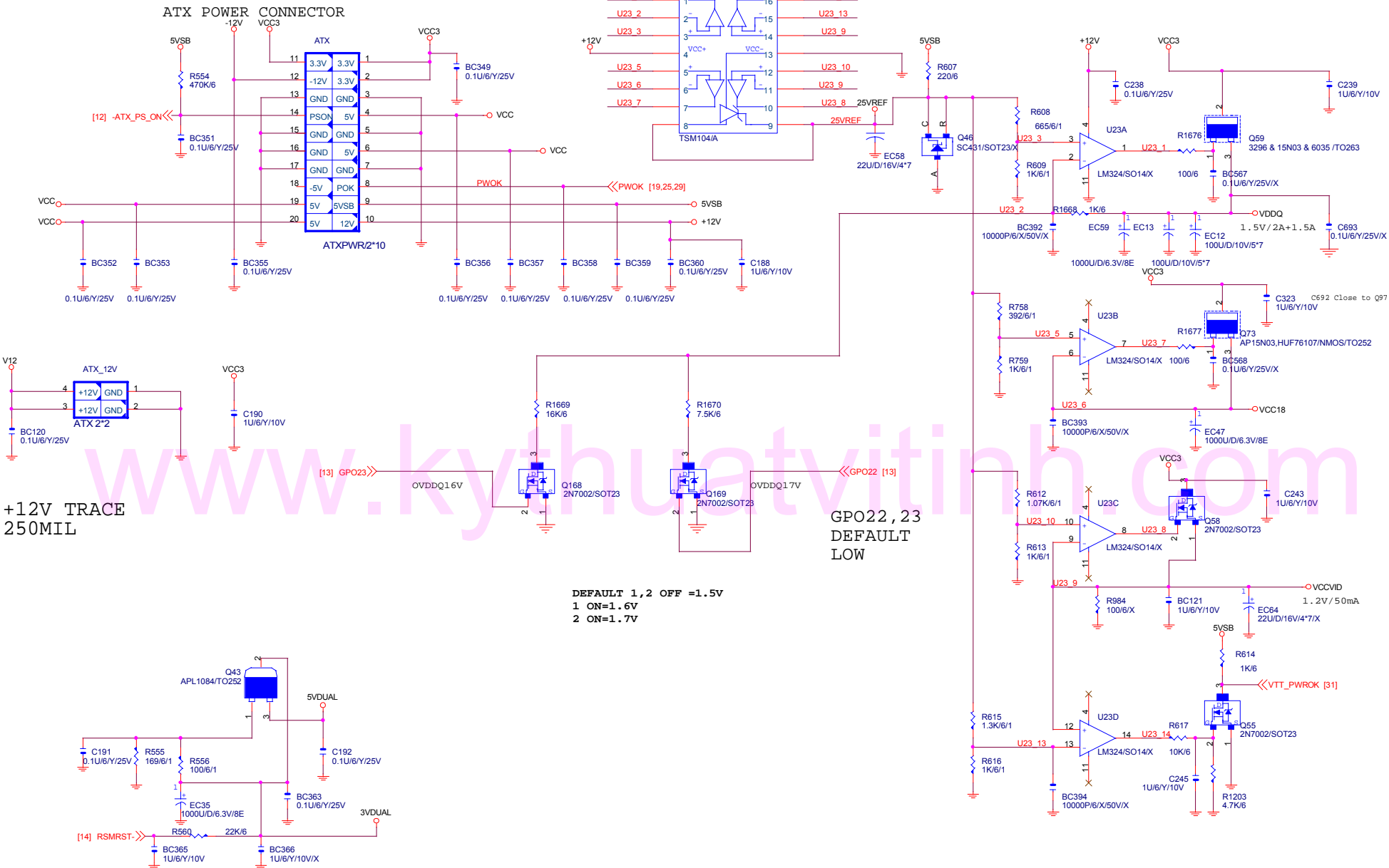
MICROPHONE IN SENSING(當OUTPUT)  
R>4K OHM=>POWER SPEAKER  
4K OHM>R>400 OHM=>MICROPHONE  
R<400 OHM=>HEADPHONE

**SPDIF\_IO**



SIOGABYTE CORP.			
Title			
PHONE JACK, GAME PORT			
Size	Document Number	Rev	
Custom	GA-8IE2004	1.0	
Date:	日期: 八月 26, 2003	Sheet	28 of 34





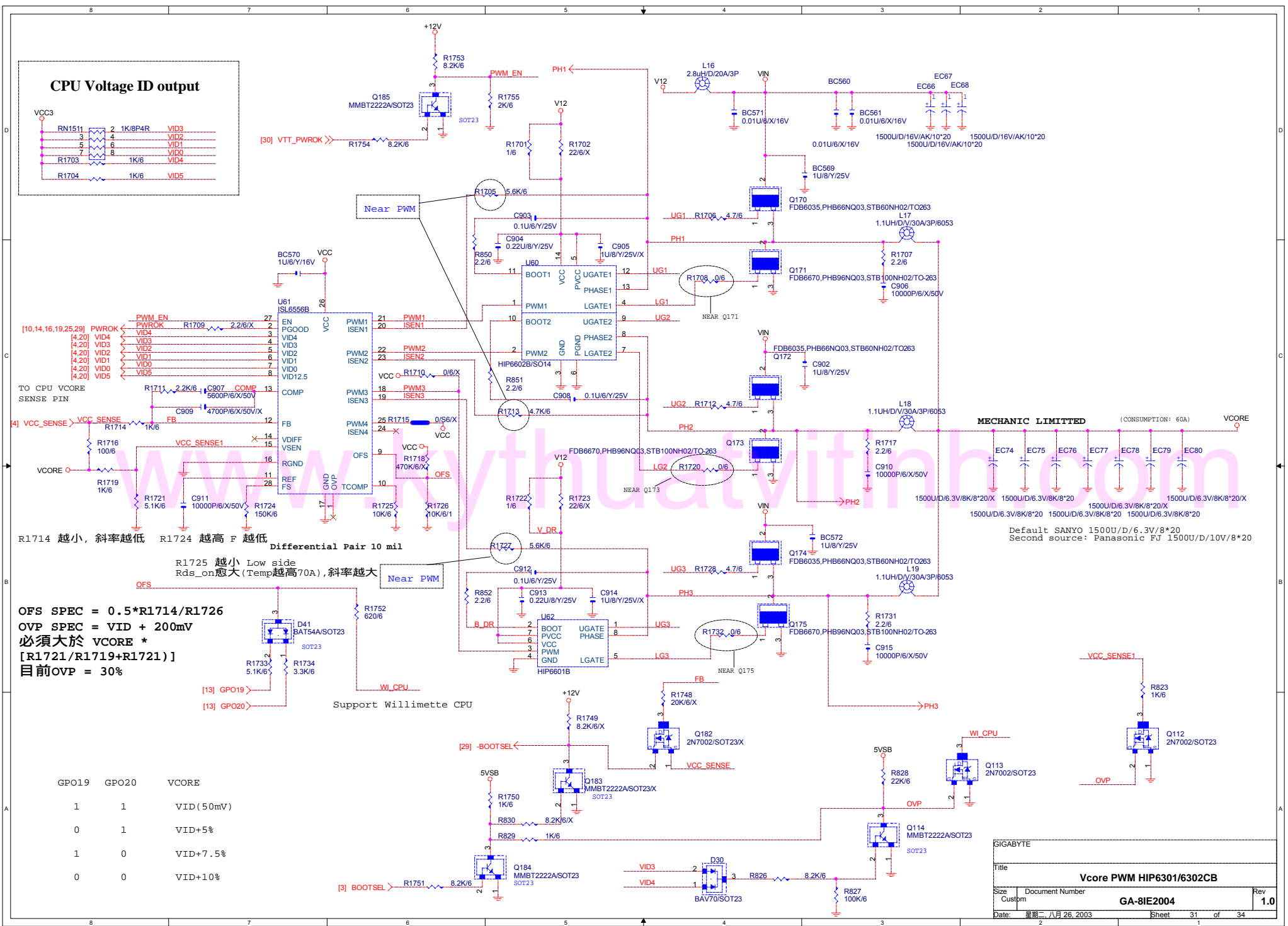
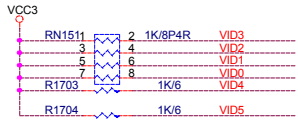
+12V TRACE  
250MIL

DEFAULT 1,2 OFF =1.5V  
1 ON=1.6V  
2 ON=1.7V

GPO22, 23  
DEFAULT  
LOW

GIGABYTE CORP.		
Title		
Misc. PWR & ATX CONN.		
Size	Document Number	Rev
B	GA-8IE2004	1.0
Date:	星期二, 八月 26, 2003	Sheet 30 of 34

### CPU Voltage ID output



[10,14,16,19,25,29] PWROK  
 [4,20] VID4  
 [4,20] VID3  
 [4,20] VID2  
 [4,20] VID1  
 [4,20] VID0  
 [4,20] VID5

TO CPU Vcore SENSE PIN  
 VCC\_SENSE  
 VCC\_SENSE1  
 Vcore

R1714 越小, 斜率越低  
 R1724 越高 F 越低  
 Differential Pair 10 mil  
 R1725 越小 Low side  
 Rds\_on 越大 (Temp 越高 70A), 斜率越大

OFS SPEC = 0.5 \* R1714 / R1726  
 OVP SPEC = VID + 200mV  
 必須大於 Vcore \*  
 [R1721 / R1719 + R1721]  
 目前 OVP = 30%

GPO19	GPO20	Vcore
1	1	VID (50mV)
0	1	VID+5%
1	0	VID+7.5%
0	0	VID+10%

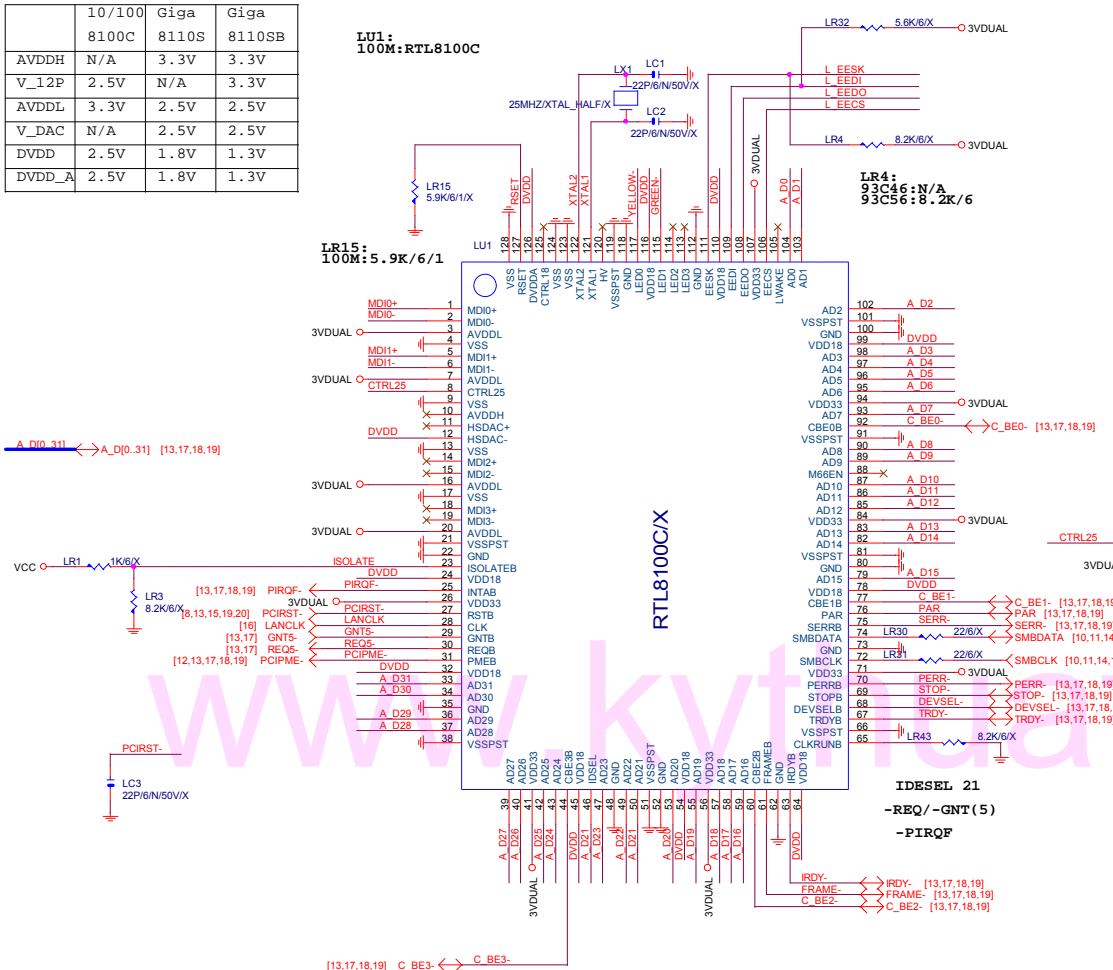
MECHANIC LIMITED (CONSUMPTION: 60A)  
 Vcore  
 EC74 EC75 EC76 EC77 EC78 EC79 EC80  
 Default SANYO 1500U/D/6.3V/8\*20  
 Second source: Panasonic FJ 1500U/D/10V/8\*20

GIGABYTE		
Title		
<b>Vcore PWM HIP6301/6302CB</b>		
Size	Document Number	Rev
Custom	<b>GA-8IE2004</b>	<b>1.0</b>
Date:	日期: 八月 26, 2003	Sheet 31 of 34

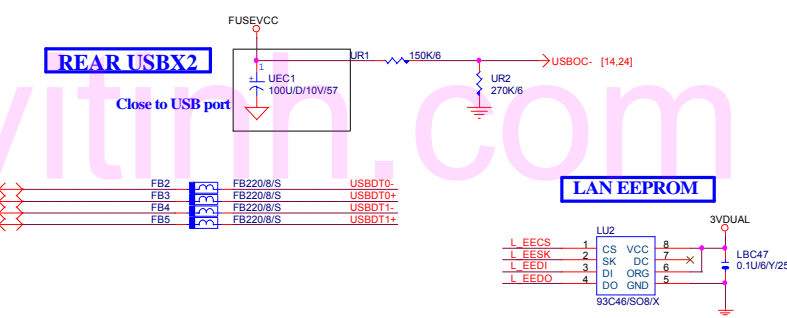
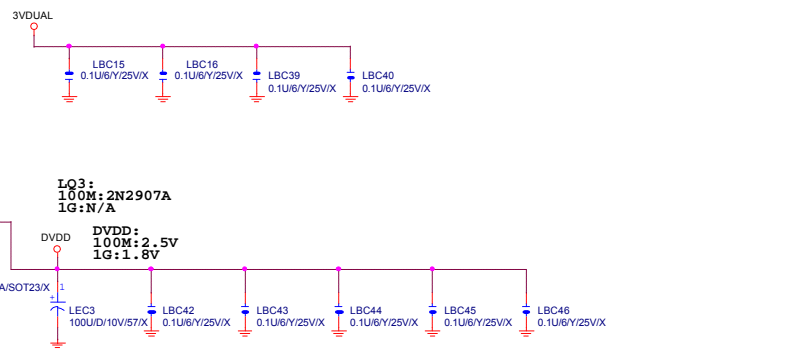
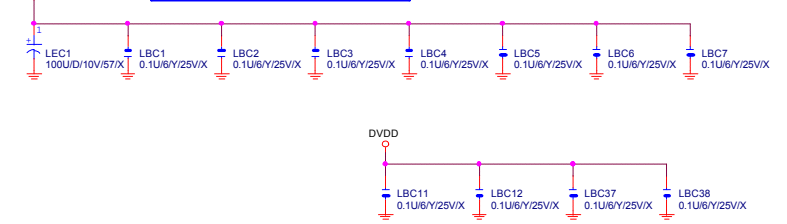
	10/100	Giga	Giga
	8100C	8110S	8110SB
AVDDH	N/A	3.3V	3.3V
V_12P	2.5V	N/A	3.3V
AVDDL	3.3V	2.5V	2.5V
V_DAC	N/A	2.5V	2.5V
DVDD	2.5V	1.8V	1.3V
DVDD_A	2.5V	1.8V	1.3V

LU1:  
100M:RTL8100C

LR15:  
100M:5.9K/6/1



**POWER DECOUPLING CAP.**

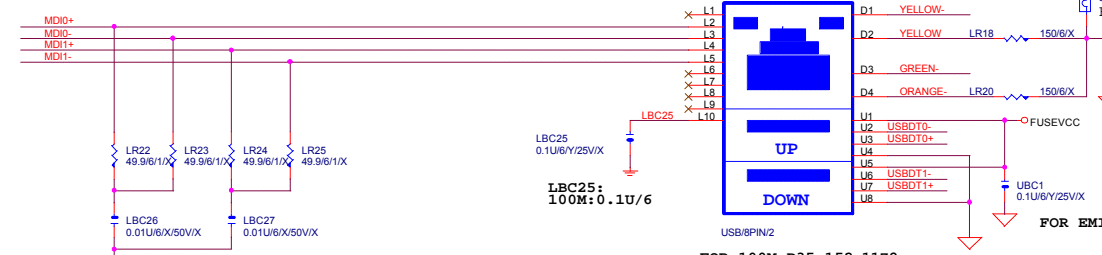


When Inel & GBT Gigabit (8110S)  
Note: LEDSI-0 must set to 00 in EEPROM

RTL8100C	10Mb	---	ON	OFF
10M/100M	100Mb	---	ON	OFF
	Link	---	ON	---
	Active	Blink	---	---

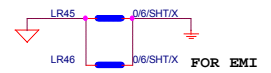
GIGABYTE			
LAN RTL8100C			
File	Document Number	Rev	1.0
Size	Custom	GA-8IE2004	
Date	日期	八月 26, 2003	Sheet 32 of 34

Spacing : at least 50 mils between each differential pair



LR22, LR23, LBC26 Close to Lan Chip  
Realtek suggestion (TX+, TX-).

LR24, LR25, LBC27 Close to Lan Chip  
Realtek Suggestion (RX+, RX-).



FOR 100M:P35-152-1129

# GIGABYTE GA-8IE2004 GPIO LIST

Revision 1.0

SHEET

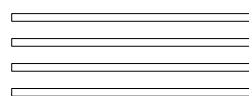
TITLE

GPI		
GPI0/REQA-	NA	PULL 8.2K TO VCC3
GPI1/REQ5-		PULL 2.7K TO VCC
GPI2/PIRQE-	ID	PULL 8.2K TO VCC3 (default)
GPI3/PIRQF-		PULL 8.2K TO VCC3
GPI4/PIRQG-		PULL 8.2K TO VCC3
GPI5/PIRQH-	ID	PULL 8.2K TO VCC3 (default)
GPI6		PULL 8.2K TO VCC3 (GREEN BUTTON)
GPI7		PULL DOWN 10K TO GND
GPI8	ID	PULL 8.2K TO VCC3 (default)
GPI9	NA	NOT IMPLEMENTED
GPI10	NA	NOT IMPLEMENTED
GPI11		PULL 4.7K TO 3VDUAL (SMBALERT)
GPI12/LPCPME-		PULL 8.2K TO 3VDUAL (PME-)
GPI13		NC
GPI14	NA	NOT IMPLEMENTED
GPI15	NA	NOT IMPLEMENTED

SHEET

TITLE

GPO		
GPO16	NA	PULL 8.2K TO VCC3 (CAN'T PULL DOWN) 因為會 decode bios address 不正確:FF
GPO17		PULL 8.2K TO VCC3 (GNT5-)
GPO18	NA	PULL 8.2K TO VCC3 此OUTPUT 會TOGGLE.(在開機時).BIOS POST
GPO19		OK PULL 8.2K TO VCC3
GPO20		PULL 8.2K TO VCC3
GPO21		PULL 8.2K TO VCC3 (TOP BLOCK)
GPO22		PULL 8.2K TO VCC3
GPO23		PULL 8.2K TO VCC3
GPO24		PULL 4.7K TO 3VDUAL
GPO25		PULL 4.7K TO 3VDUAL (POWER LED)
GPO26		NOT IMPLEMENTED
GPO27		PULL 8.2K TO 3VDUAL (POWER LED)
GPO28		PULL 8.2K TO 3VDUAL
GPO32		PULL 8.2K TO 3VDUAL (BIOS WRITE PROTECT )
GPO35		PULL DOWN 10K TO GND (POWER LED)

		COMPONENT SIDE (0.5 oz. Copper) VCC SIDE (1 oz. Copper) GND SIDE (1 oz. Copper) SOLDER SIDE (0.5 oz. Copper)
<b>GIGABYTE</b>		
Title: <b>GPIO LIST</b>		
Size Custom	Document Number: <b>GA-8IE2004</b>	Rev: <b>1.0</b>
Date: 星期二, 八月 26, 2003	Sheet 33 of 34	

