





# BLOCK DIAGRAM

**INTEL Pentium4 (478)**

V<sub>CORE</sub> = 1.75V / SLEEP : 1.3V  
V<sub>CC3</sub>

PAGE 4, 5, 6

**PWM/OTHER POWER**

V<sub>CORE</sub> = 1.75V (60-110MHZ) / SLEEP : 1.3V  
5V<sub>SB</sub>-12V,+12V,V<sub>CC</sub>,V<sub>CC3</sub>,3V<sub>DUAL</sub>  
V<sub>TT</sub>,DDR2,5V<sub>STR</sub>

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**CLOCK GENERATOR**

CKVDD = 3.3V

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**GMCH  
BROOKDALE-G-DDR**

V<sub>CORE</sub> = 1.75V / SLEEP : 1.3V  
2, 5V<sub>STR</sub> = 2.5V(MEMORY,SUSPEND POWER)  
V<sub>DDQ</sub> = 1.5V (AGP POWER 4X, HUBLINK)

PAGE 7, 8, 9

**DDR SDRAM DIMM X 3**

2, 5V<sub>STR</sub> = 2.5V(MEMORY,SUSPEND POWER)  
V<sub>TT</sub>,DDR = 1.25V

PAGE 10, 11, 12

**AGP SLOT 4X**

V<sub>DDQ</sub> = 1.5V (AGP POWER 4X)  
V<sub>CC3</sub> = 3.3V  
+12V = 12V  
3V<sub>DUAL</sub> = 3.3V  
V<sub>CC</sub> = 5V

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**ICH4**

V<sub>CC25</sub> = 2.5V(I/O, MEMORY), V<sub>LINK(I)</sub>  
3V<sub>DUAL</sub> = 3.3V(SUSPEND POWER)  
V<sub>CC3</sub> = 3.3V  
RTC V<sub>DD</sub> = 3.3V

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**FRONT USB CONN.**

PAGE 22

**IDE Primary and Secondary**

V<sub>CC</sub> = 5V

PAGE 24

**FWH**

V<sub>CC</sub> = 5V  
V<sub>CC3</sub> = 3V

PAGE 16

**LPC I/O ITE8712**  
FDD IR/CIR S\_IRQ GAME

V<sub>CC</sub> = 5V  
V<sub>CC3</sub> = 3V

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**I/O PORTS :**  
COMA COMB LPT PS2

PAGE 26

**FRONT PANEL /FANS**

V<sub>CC</sub> = 5V  
5V<sub>SB</sub> = 5V  
+12 = 12V  
V<sub>CC3</sub> = 3V  
3V<sub>DUAL</sub> = 3V

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**REAR USB PORTS**

V<sub>CC</sub> = 5V  
5V<sub>SB</sub> = 5V  
5V<sub>USB</sub> = 5V

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**PCI SLOT 1,2,3,4,5**

+12 = 12V  
+12 = 12V  
V<sub>CC</sub> = 5V  
V<sub>CC3</sub> = 3V  
3V<sub>DUAL</sub> = 3V

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**REALTEK 8100C LAN**

+12 = 12V  
+12 = 12V  
V<sub>CC</sub> = 5V  
V<sub>CC3</sub> = 3V  
3V<sub>DUAL</sub> = 3V

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**AC97 CODEC 9761A**

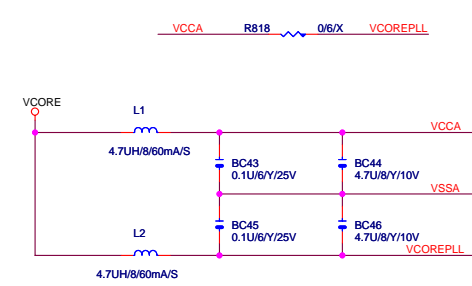
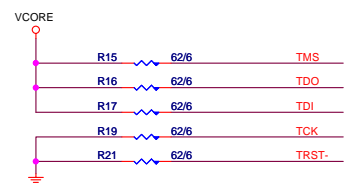
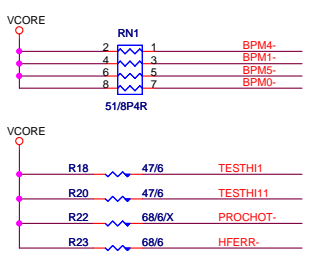
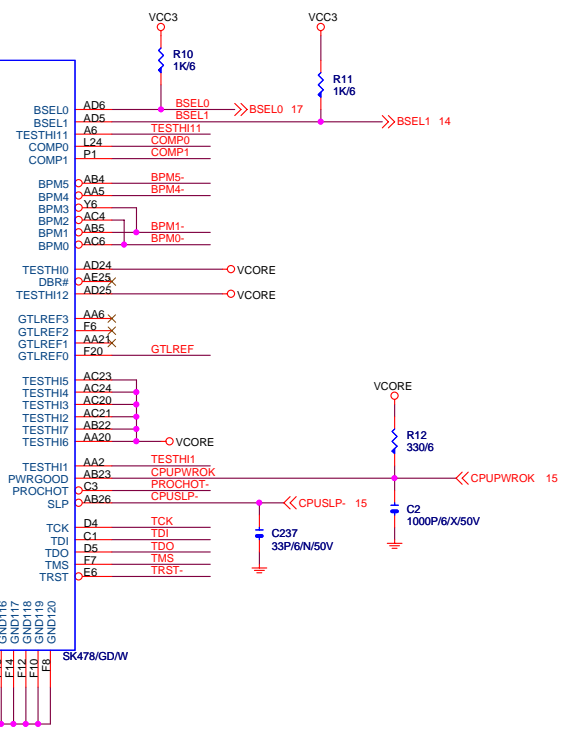
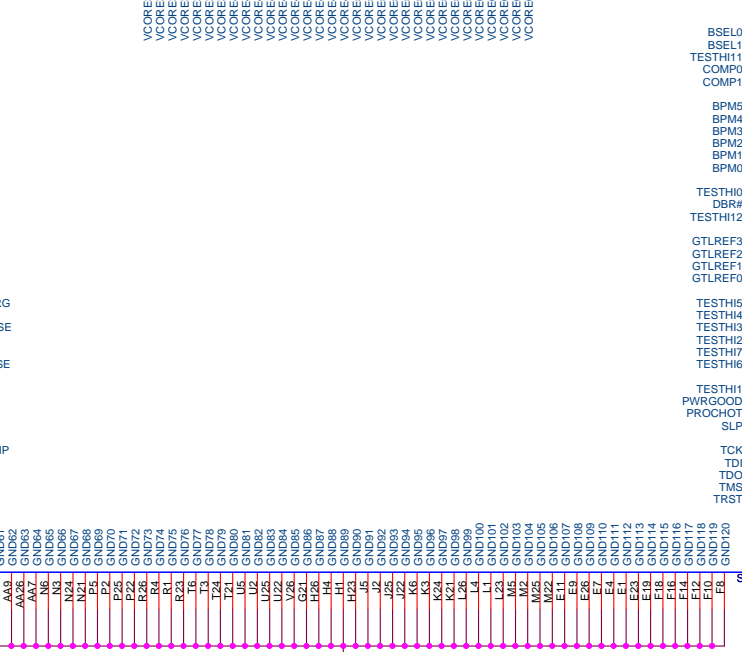
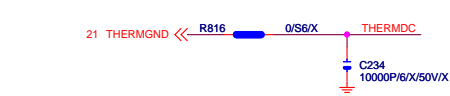
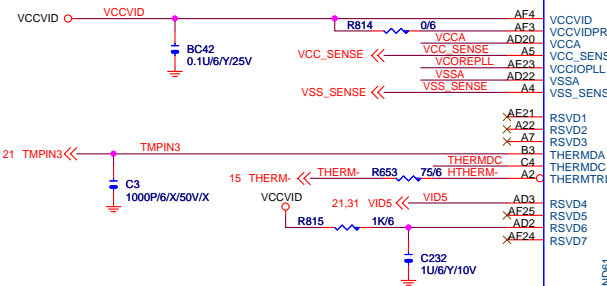
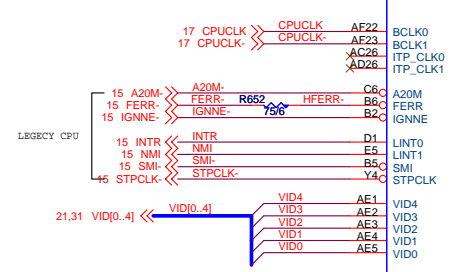
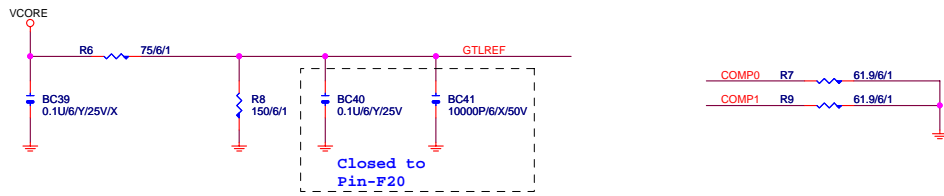
+12V = 12V  
V<sub>CC3</sub> = 3.3V  
V<sub>CC</sub> = 5V  
V<sub>DDQ</sub> = 5V

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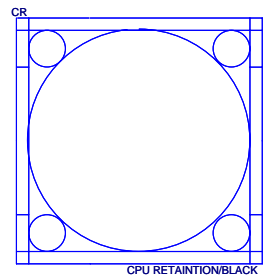
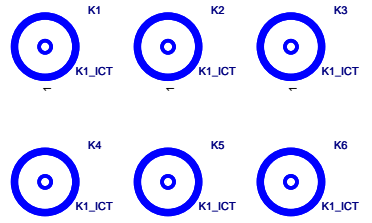
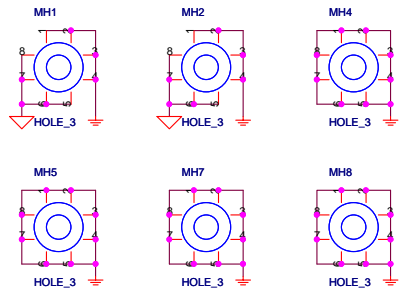
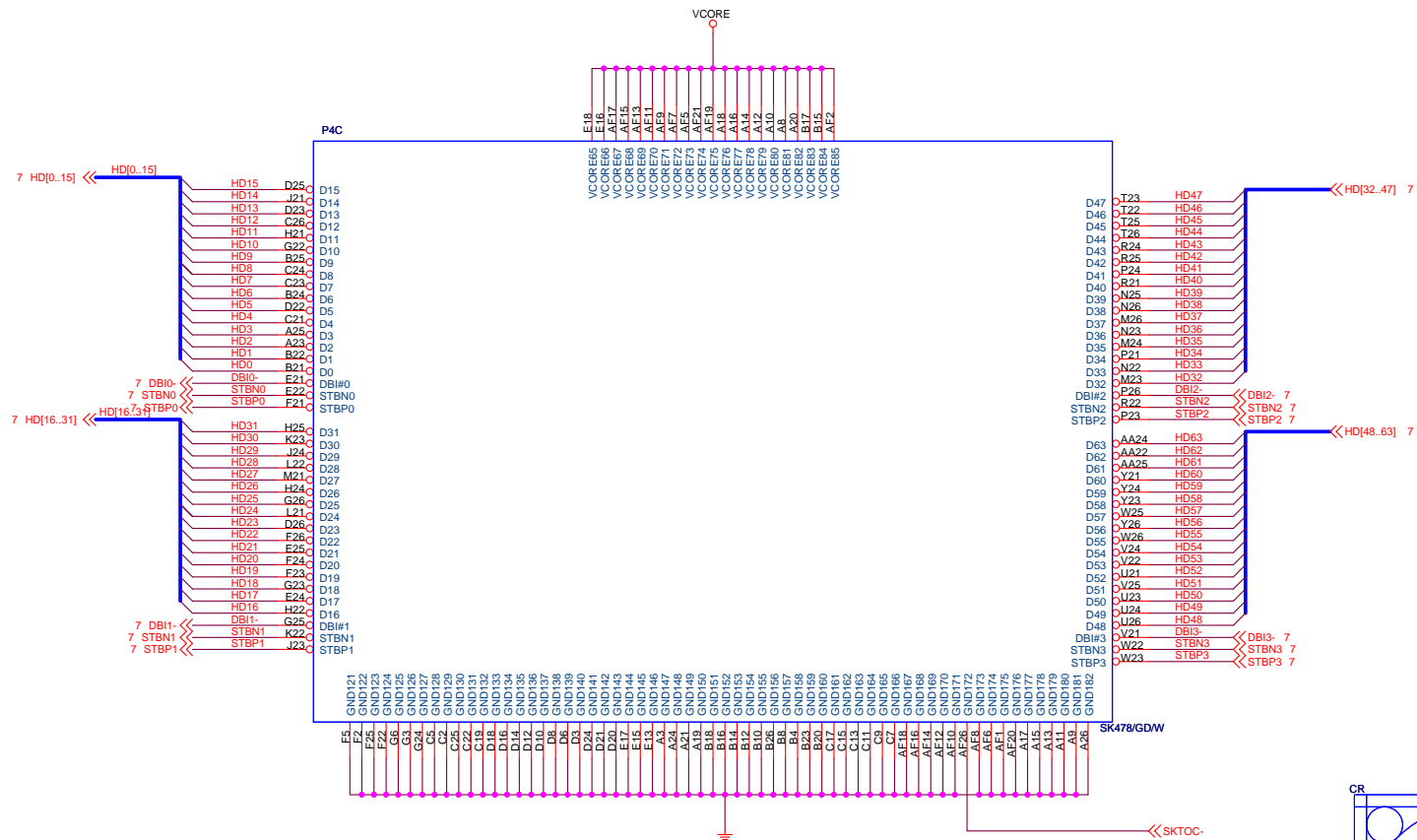
**AUDIO PORTS :** FRONT AUDIO  
LIN\_ OUT LINE\_IN MIC  
TELE CD\_IN

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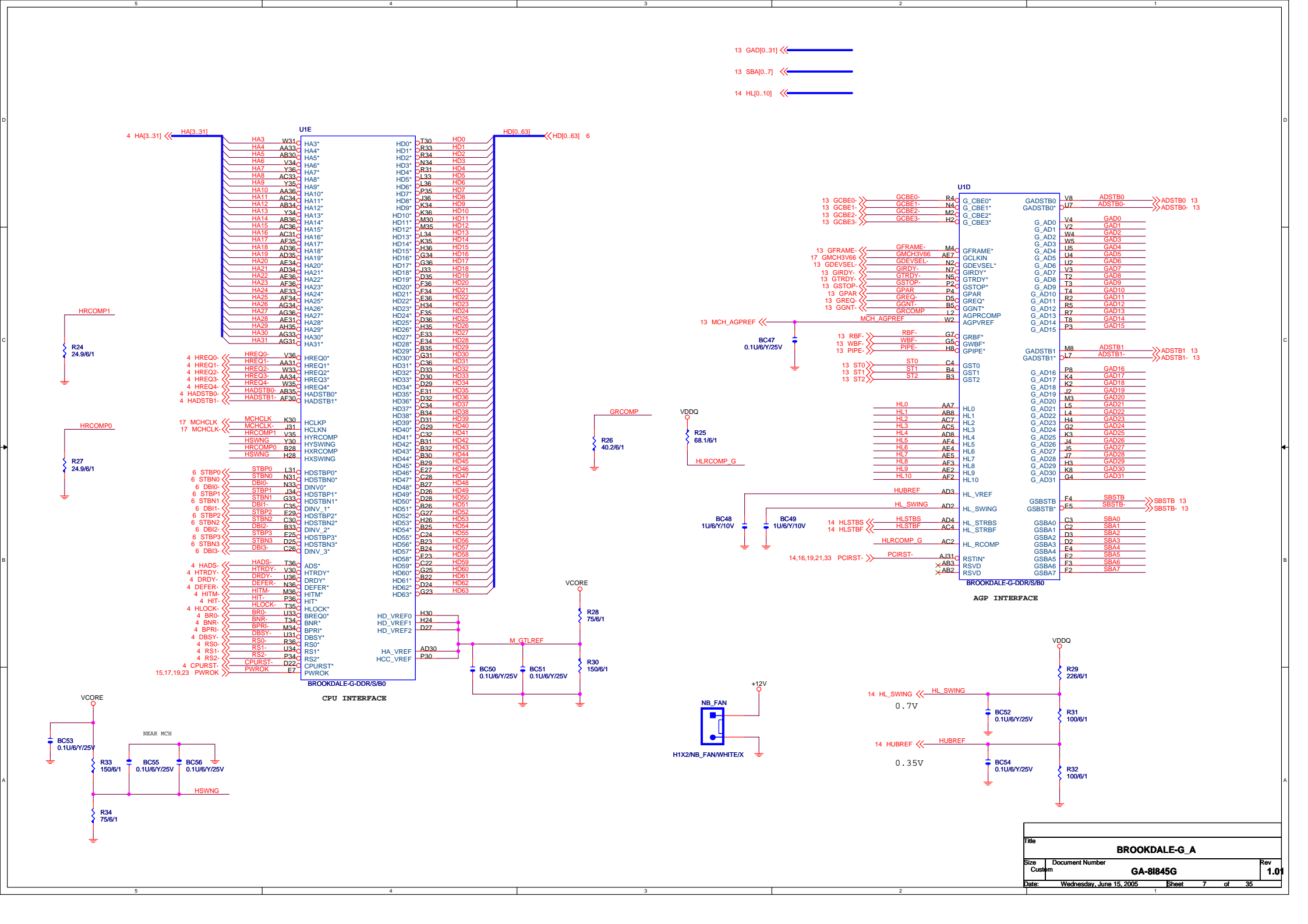




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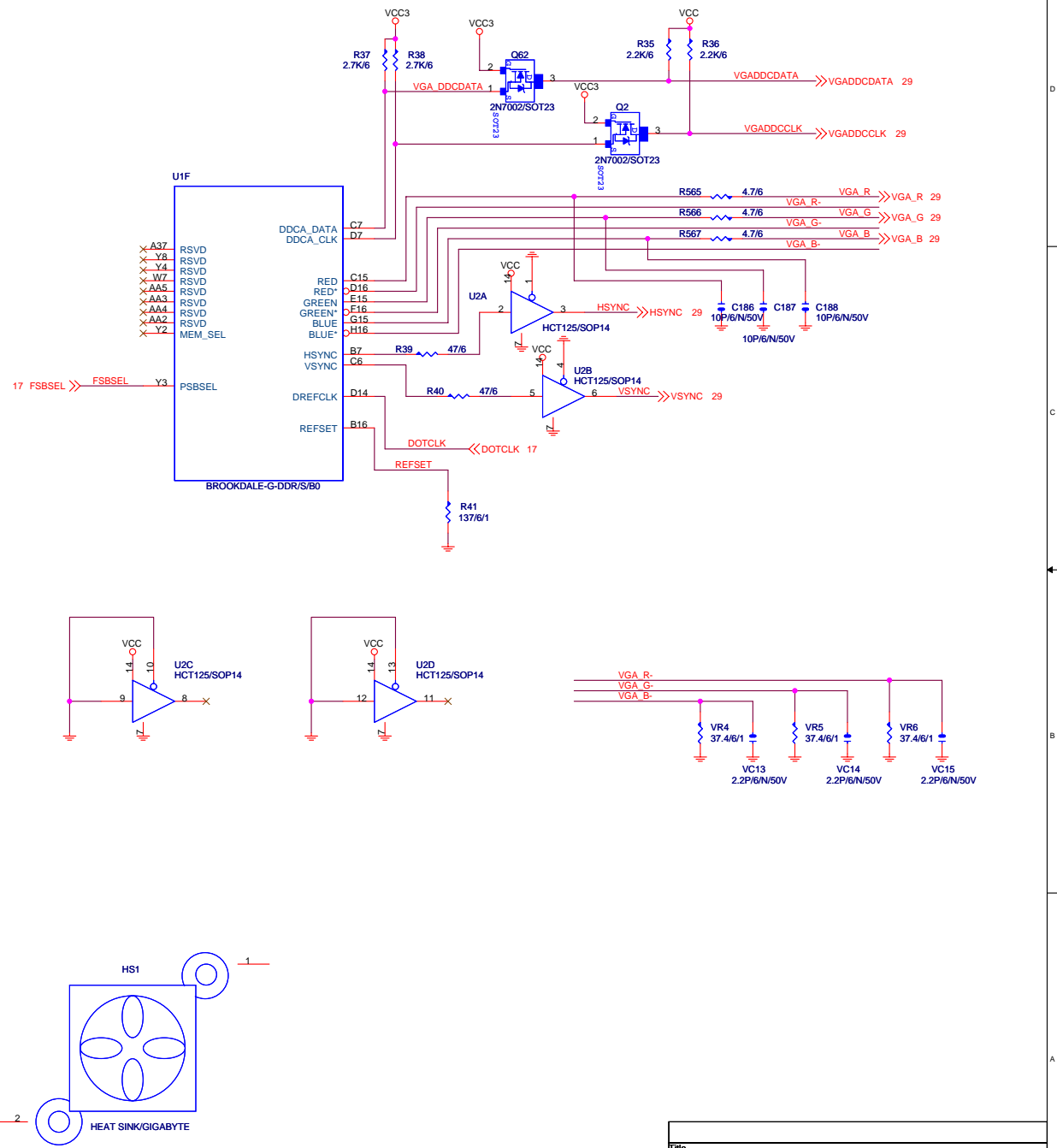
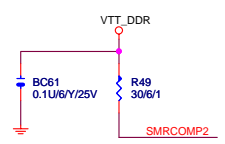
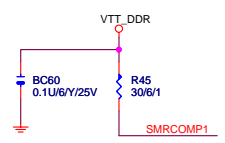
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 11,12 MAA\_CPC[1..5] >> MAA\_CPC[1..5]  
 11,12 MAB\_CPC[1..5] >> MAB\_CPC[1..5]  
 10 DM[0..7] >> DM[0..7]  
 10 MD[0..63] >> MD[0..63]  
 10 -DQS[0..7] >> -DQS[0..7]

UHC			
MAA0	AL25	SMAA0	SDQS0
MAA_CPC1	AN25	SMAA1	SDM0
MAA_CPC2	AP23	SMAA2	
MAA3	AK20	SMAA3	SDQ0
MAA_CPC4	AL19	SMAA4	SDO1
MAA_CPC5	AL17	SMAA5	SDO2
MAA6	AP19	SMAA6	SDO3
MAA7	AP17	SMAA7	SDO4
MAA8	AN17	SMAA8	SDO5
MAA9	AK16	SMAA9	SDO6
MAA10	AK26	SMAA10	SDO7
MAA11	AL15	SMAA11	
MAA12	AN15	SMAA12	
MAB_CPC1	AP25	SMAB1	SDQS1
MAB_CPC2	AN23	SMAB2	SDM1
MAB_CPC4	AN19	SMAB4	
MAB_CPC5	AK18	SMAB5	
11,12 -SWEA	AP29	SWE*	SDO8
11,12 -SCASA	AN29	SCAS*	SDO9
11,12 -SRASA	AK28	SRAS*	SDO10
11,12 SBS0	SBS0	SBA0	SDQ11
11,12 SBS1	SBS1	SBA1	SDQ12
11,12 -CS0	AL29	SCS0*	SDQ13
11,12 -CS1	AP31	SCS1*	SDQ14
11,12 -CS2	AK30	SCS2*	SDQ15
11,12 -CS3	AN31	SCS3*	
11,12 CKE0	AK13	SCKE0	SDQ16
11,12 CKE1	AN13	SCKE1	SDQ17
11,12 CKE2	AK14	SCKE2	SDQ18
11,12 CKE3	AL13	SCKE3	SDQ19
11 DCLK0	DCLK0	SCMD_CLK0	SDQ20
11 -DCLK0	-DCLK0	SCMD_CLK0*	SDQ21
11 DCLK1	DCLK1	SCMD_CLK1	SDQ22
11 -DCLK1	-DCLK1	SCMD_CLK1*	SDQ23
11 DCLK2	DCLK2	SCMD_CLK2	SDQ24
11 -DCLK2	-DCLK2	SCMD_CLK2*	SDQ25
11,12 DCLK3	DCLK3	SCMD_CLK3	SDQ26
11,12 -DCLK3	-DCLK3	SCMD_CLK3*	SDQ27
11,12 DCLK4	DCLK4	SCMD_CLK4	SDQ28
11,12 -DCLK4	-DCLK4	SCMD_CLK4*	SDQ29
11,12 DCLK5	DCLK5	SCMD_CLK5	SDQ30
11,12 -DCLK5	-DCLK5	SCMD_CLK5*	SDQ31
SDQS3	AR18	DM3	
SDQS4	AR24	DM4	
SDQ32	AP22	MD32	
SDQ33	AP24	MD34	
SDQ34	AT26	MD35	
SDQ35	AT22	MD36	
SDQ36	AT23	MD37	
SDQ37	AT25	MD38	
SDQ38	AT26	MD39	
SDQ39	AT26	MD39	
SDQS5	AT29	DM5	
SDQS6	AR34	DM6	
SDQ40	AP26	MD40	
SDQ41	AT28	MD41	
SDQ42	AR30	MD42	
SDQ43	AP30	MD43	
SDQ44	AT27	MD44	
SDQ45	AR28	MD45	
SDQ46	AT30	MD46	
SDQ47	AT31	MD47	
SDQS7	AL36	DM7	
SDQS8	AR32	DM8	
SDQ48	AT32	MD48	
SDQ49	AR32	MD49	
SDQ50	AP32	MD50	
SDQ51	AP35	MD51	
SDQ52	AP32	MD52	
SDQ53	AT33	MD53	
SDQ54	AP34	MD54	
SDQ55	AT35	MD55	
SDQS7	AL36	DM7	
SDQS8	AR32	DM8	
SDQ56	AN36	MD56	
SDQ57	AM36	MD57	
SDQ58	AK36	MD58	
SDQ59	AJ36	MD59	
SDQ60	AP36	MD60	
SDQ61	AM35	MD61	
SDQ62	AK35	MD62	
SDQ63	AK34	MD63	



Total trace = 100 mils



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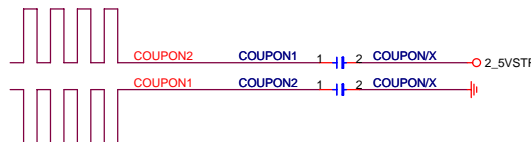
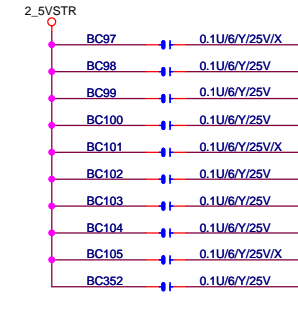
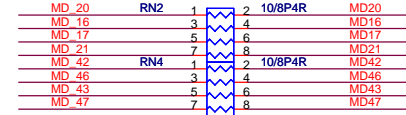
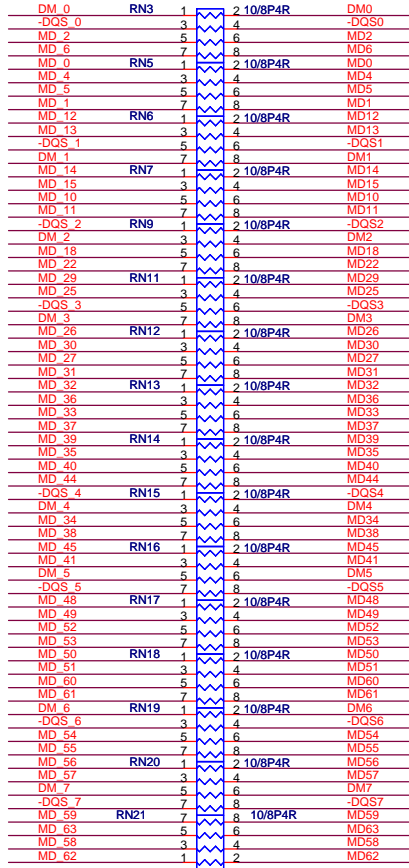




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11,12 DM[0..7] >> >>DM[0..7] 8

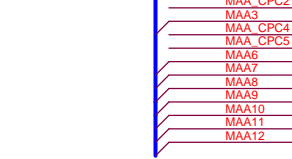
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2\_5VSTR

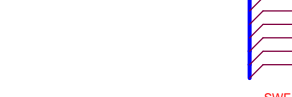
8.12 MAA[0..12] >>



8.12 SBS0 >> SBS0 59  
8.12 SBS1 >> SBS1 52

8.12 -CS0 >> -CS0 157  
8.12 -CS1 >> -CS1 158

10.12 DM\_[0..7] >>



8.12 -SWEA >> -SWEA 63  
8.12 -SCASA >> -SCASA 65  
8.12 -SRASA >> -SRASA 154

8.12 CKE0 >> CKE0 21  
8.12 CKE1 >> CKE1 111

8 DCLK1 >> DCLK1 16  
8 -DCLK1 >> -DCLK1 17  
8 DCLK0 >> DCLK0 137  
8 -DCLK0 >> -DCLK0 138  
8 DCLK2 >> DCLK2 76  
8 -DCLK2 >> -DCLK2 75

10.12 -DQS\_[0..7] >>



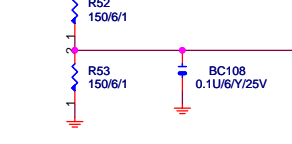
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BC106 0.1u/6/Y/25V >> BC106 184

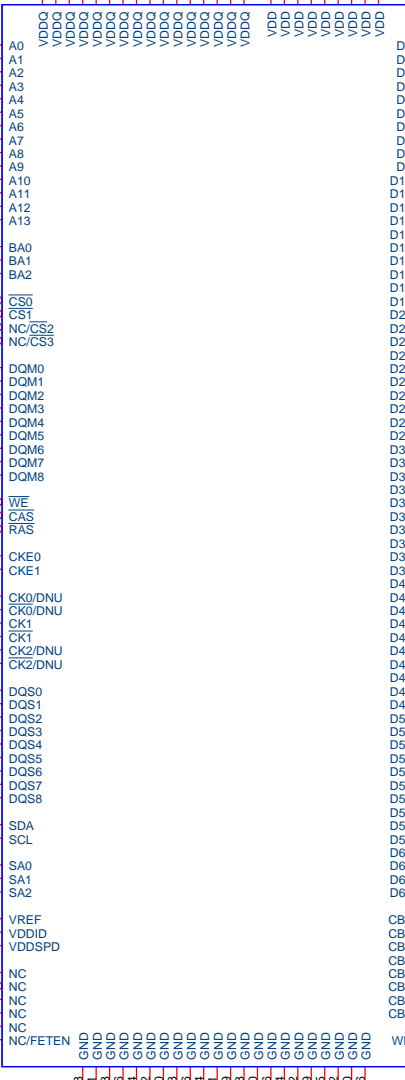
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NC >> NC 10  
NC >> NC 101  
NC >> NC 102  
NC >> NC 173  
NC >> NC 167

NC/FETEN >> NC/FETEN 90

2\_5VSTR



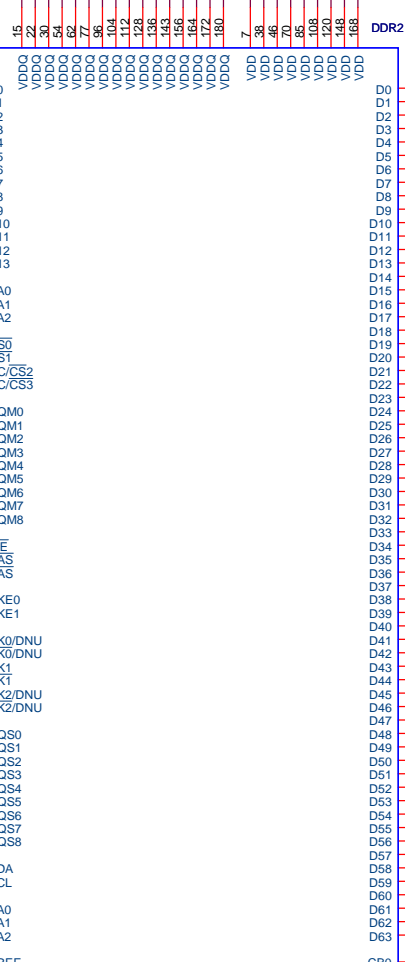
DDR1



DDR/BLACK

3 GND 11  
18 GND 18  
28 GND 28  
42 GND 42  
50 GND 50  
58 GND 58  
68 GND 68  
74 GND 74  
80 GND 80  
83 GND 83  
100 GND 100  
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132 GND 132  
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160 GND 160  
176 GND 176

2\_5VSTR

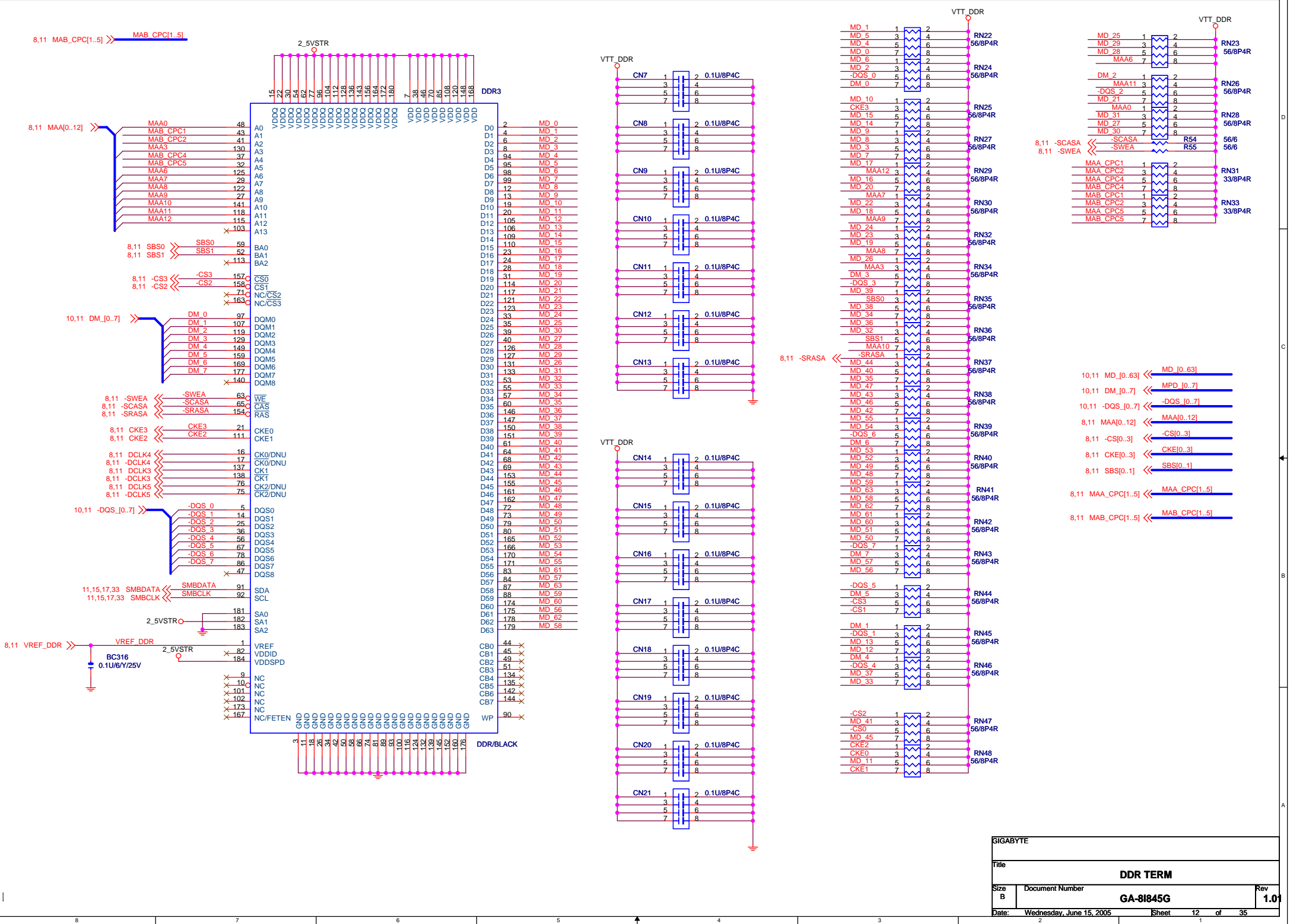


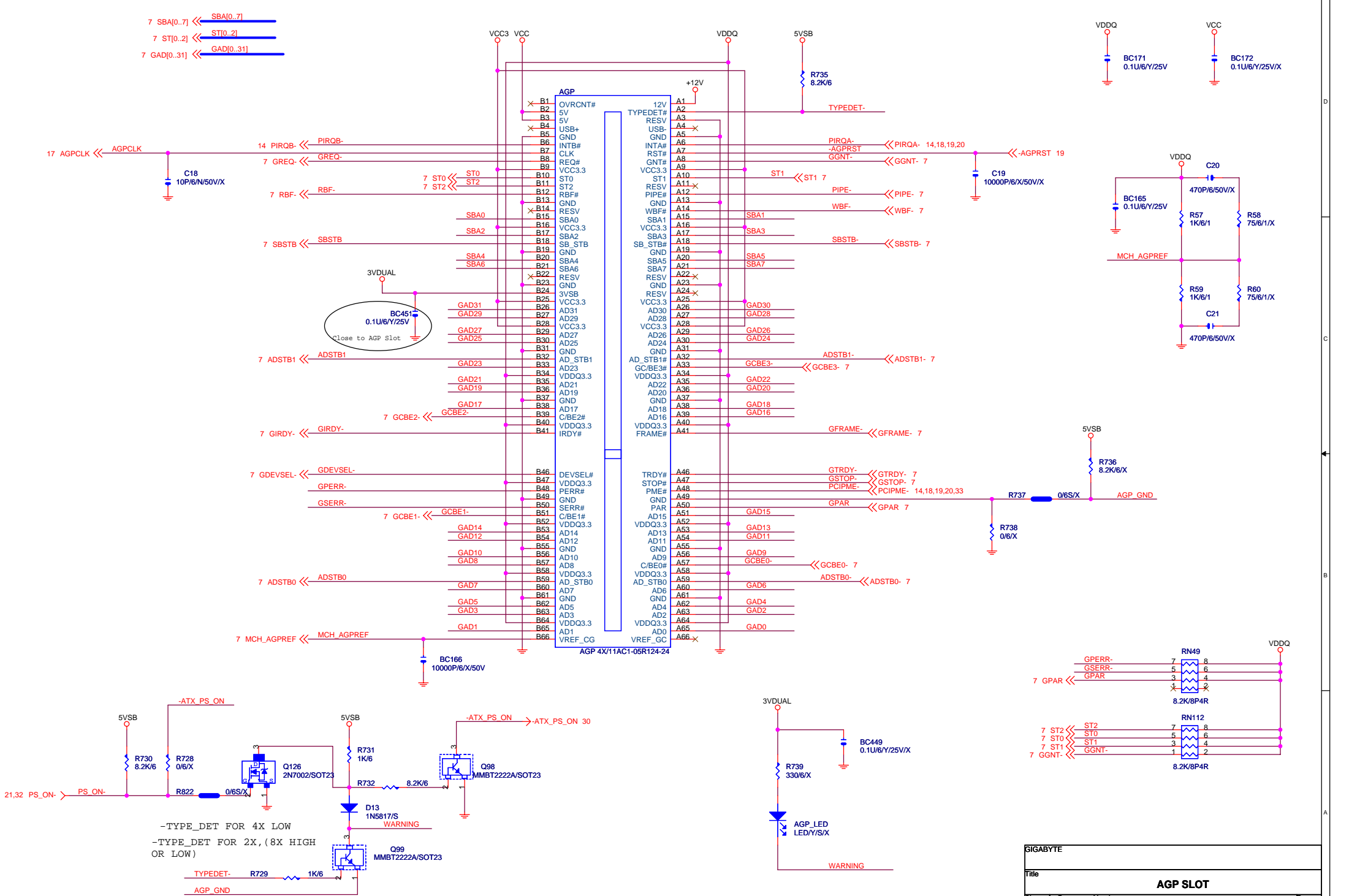
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18 GND 18  
28 GND 28  
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50 GND 50  
58 GND 58  
68 GND 68  
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83 GND 83  
100 GND 100  
116 GND 116  
124 GND 124  
132 GND 132  
145 GND 145  
152 GND 152  
160 GND 160  
176 GND 176

DDR/BLACK

GIGABYTE			
Title			
DDR1,2			
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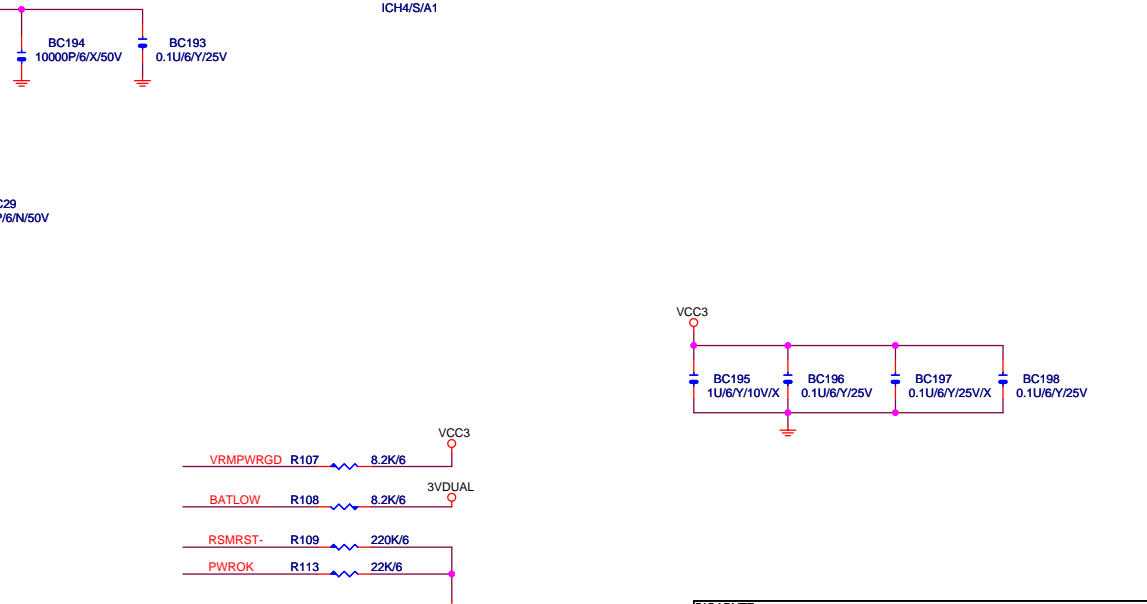
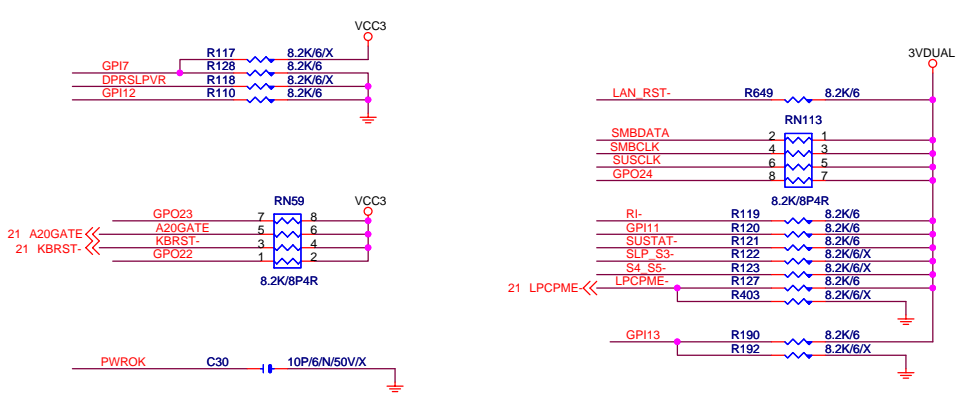
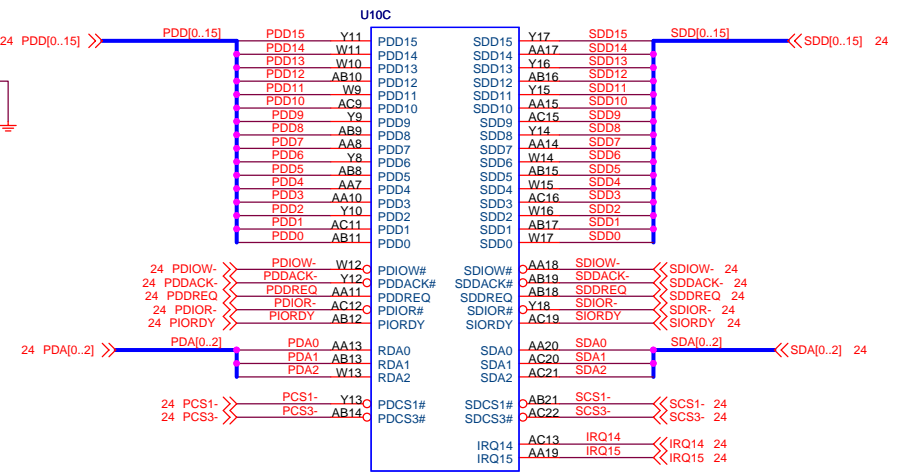
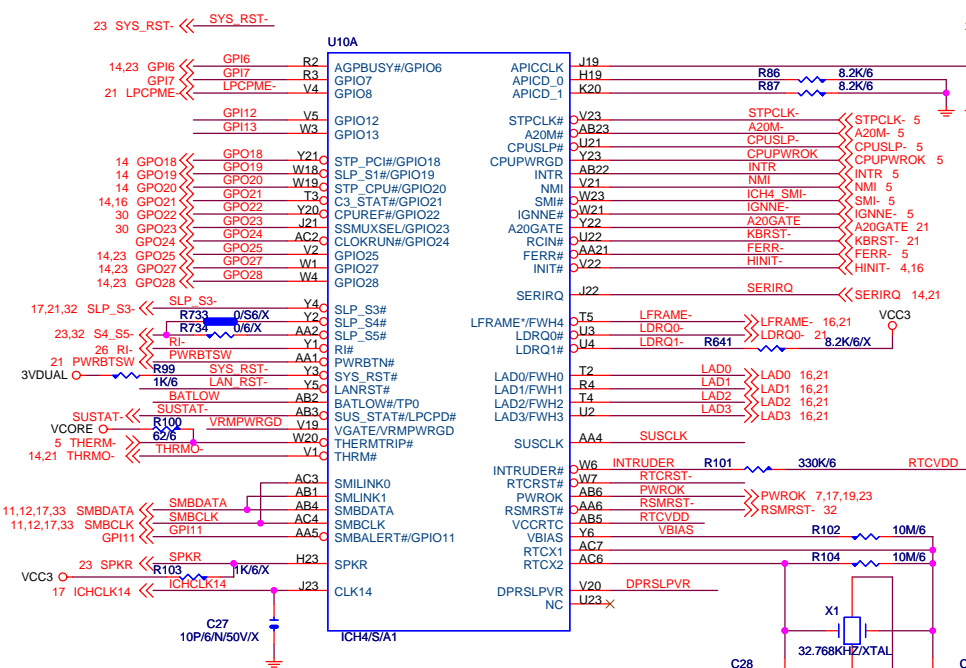
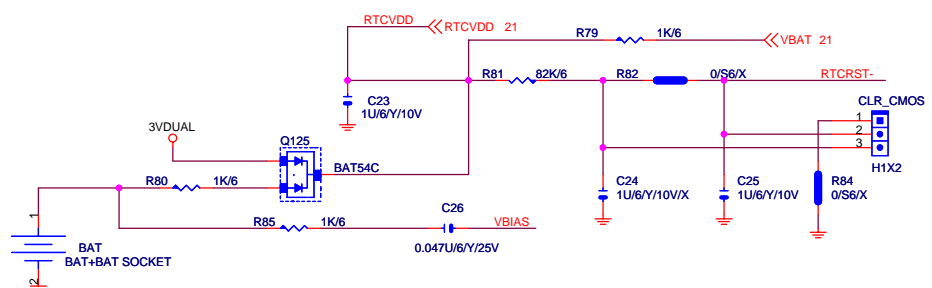




Layout 時整組線路均需靠近 AGP SLOT

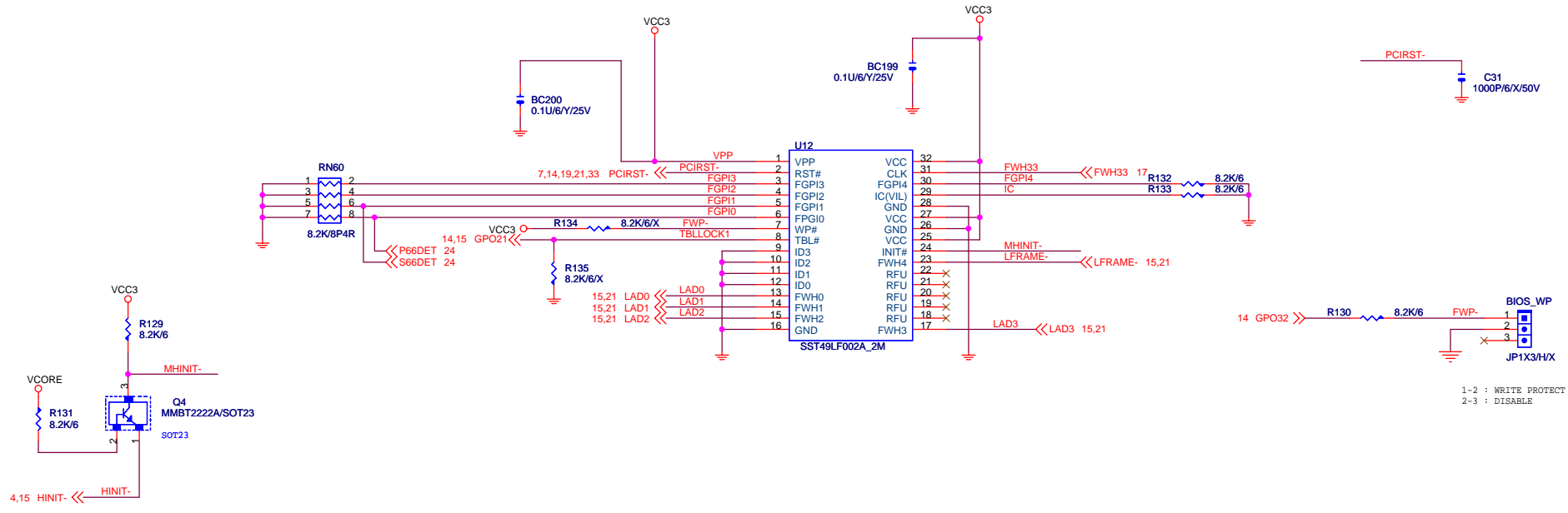
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Size	Document Number	Rev	
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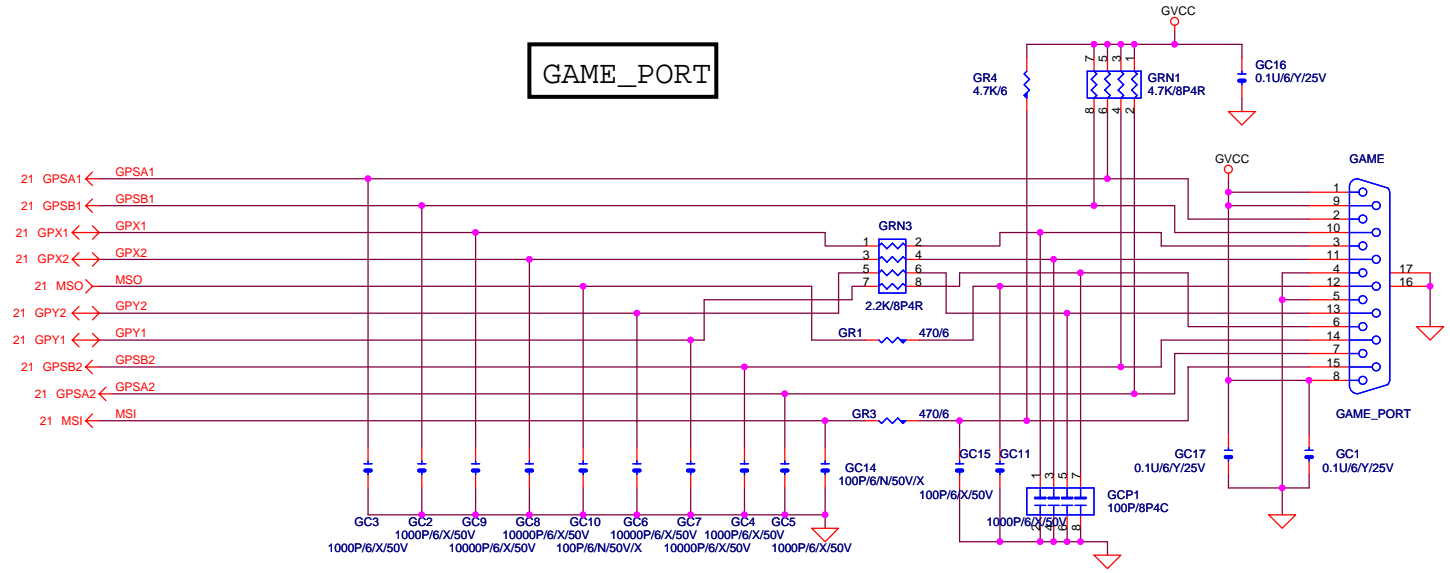


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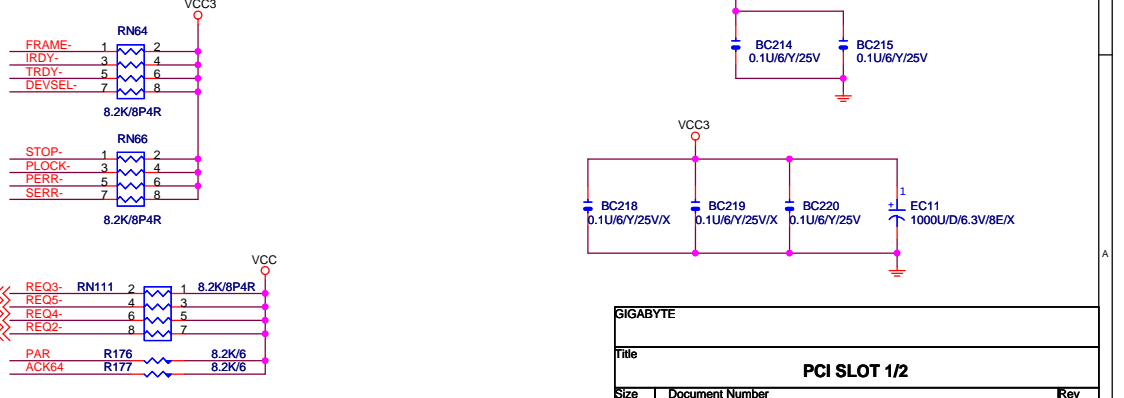
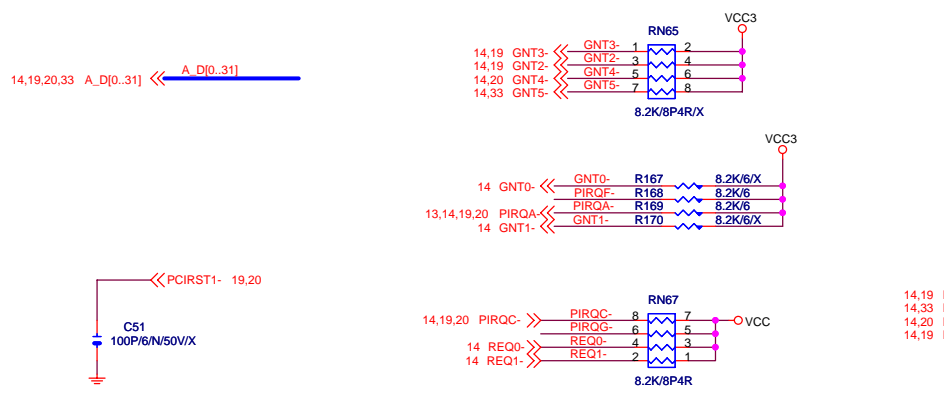
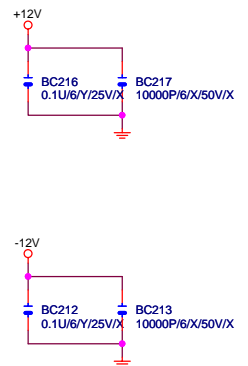
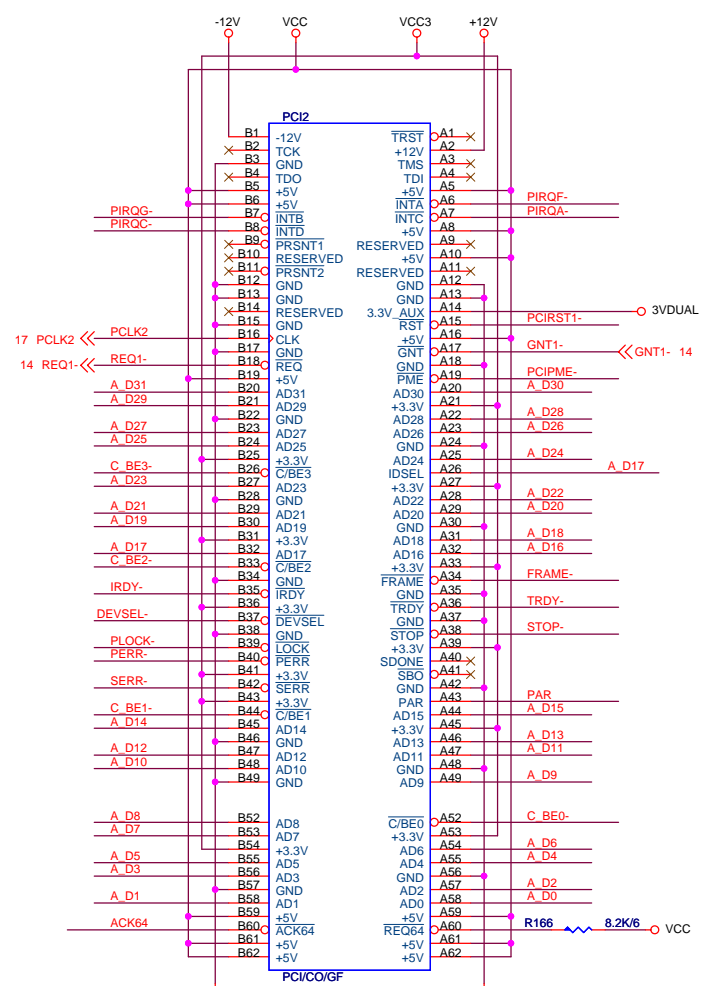
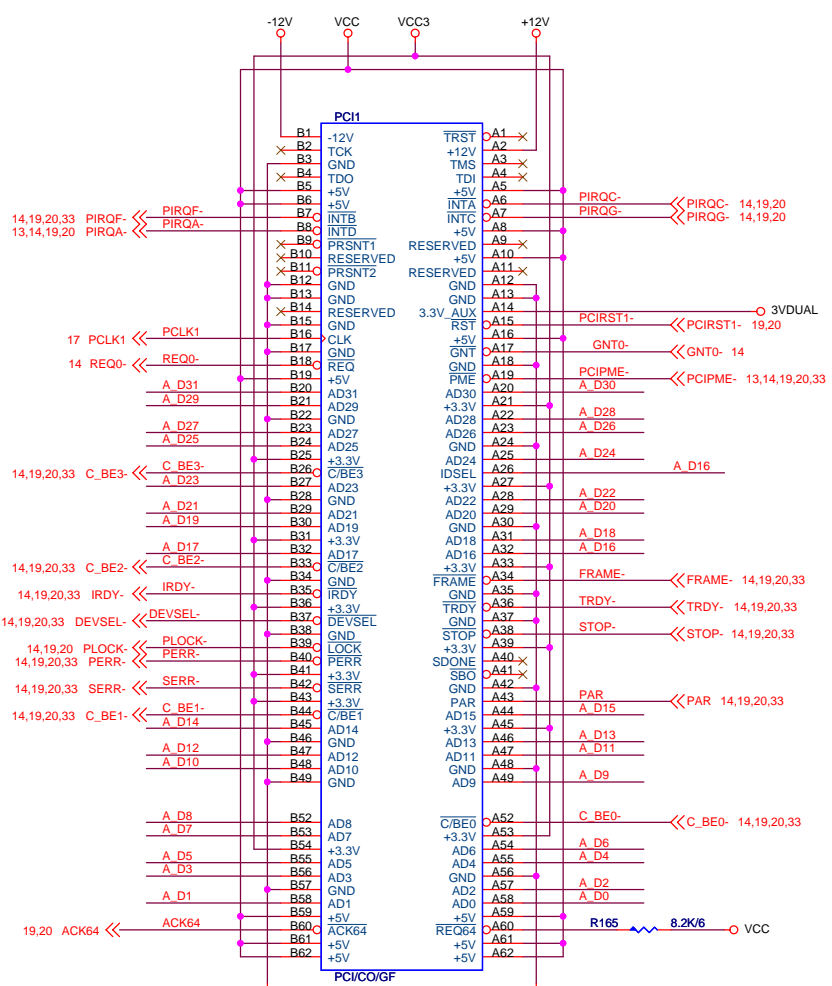
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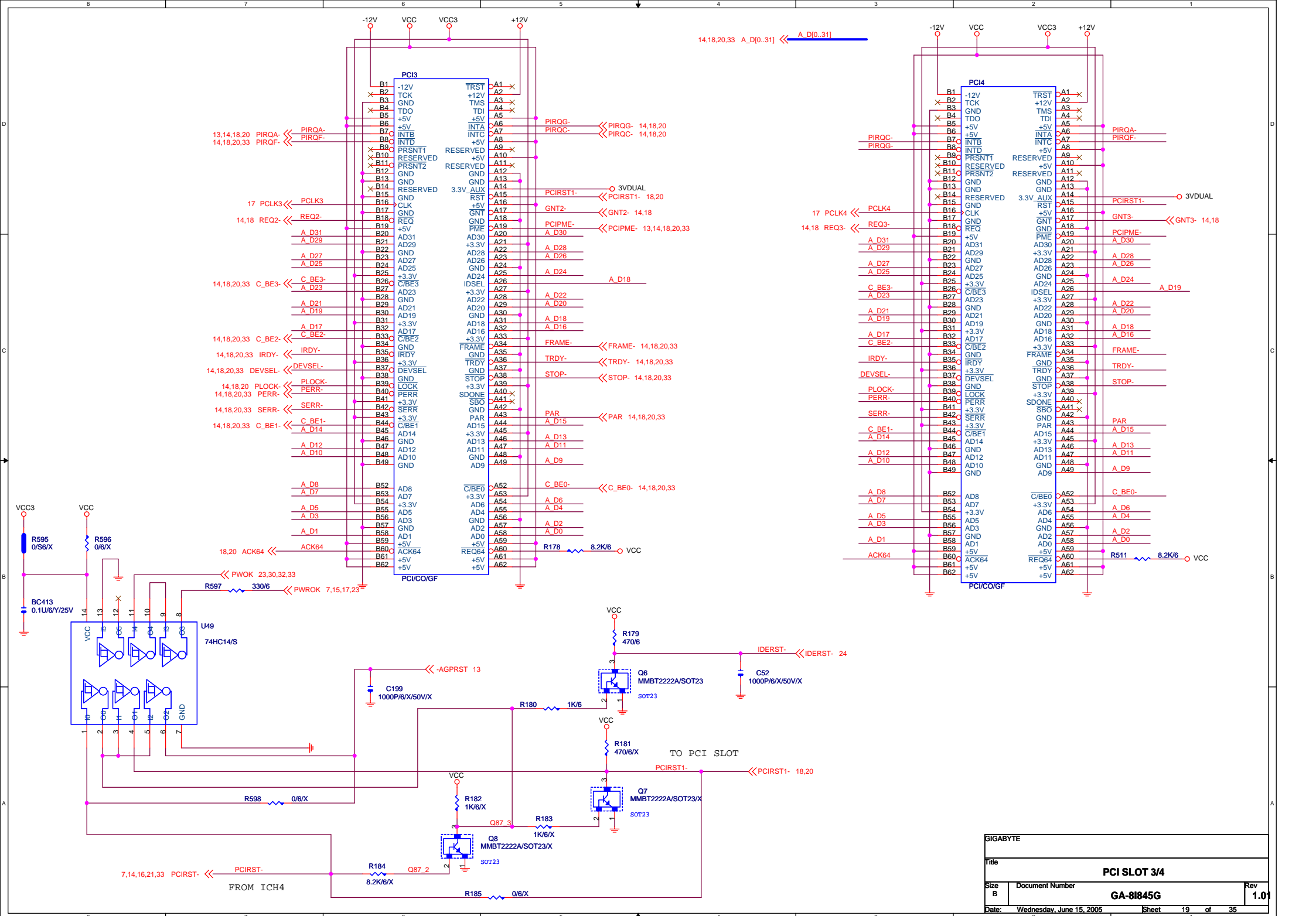
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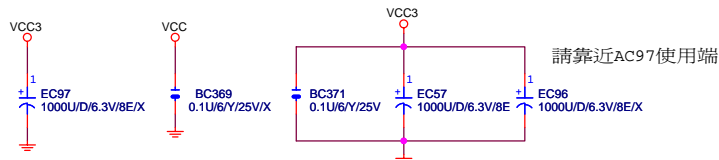
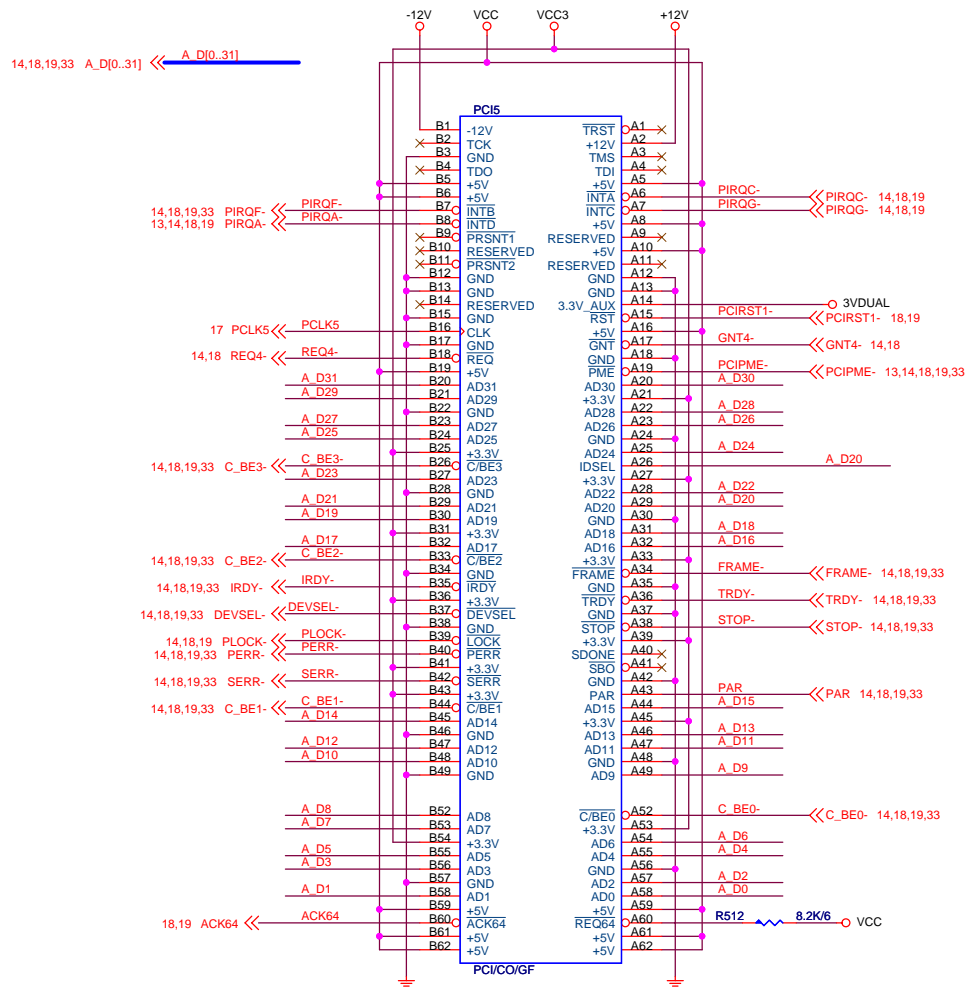




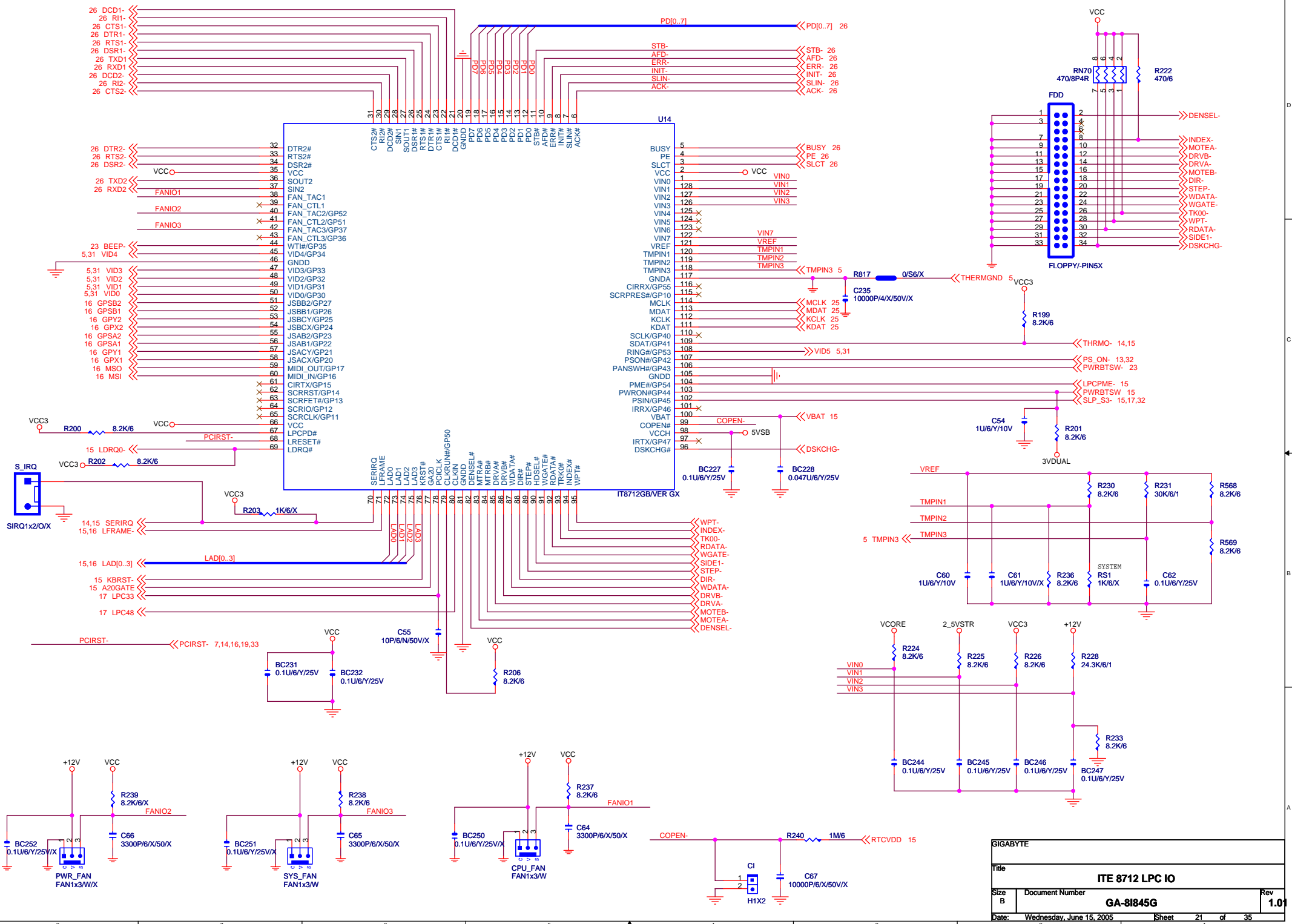
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Size	Document Number	Rev	
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GIGABYTE			
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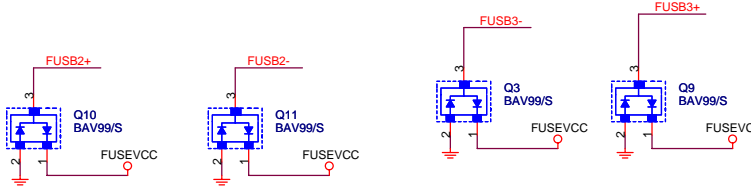
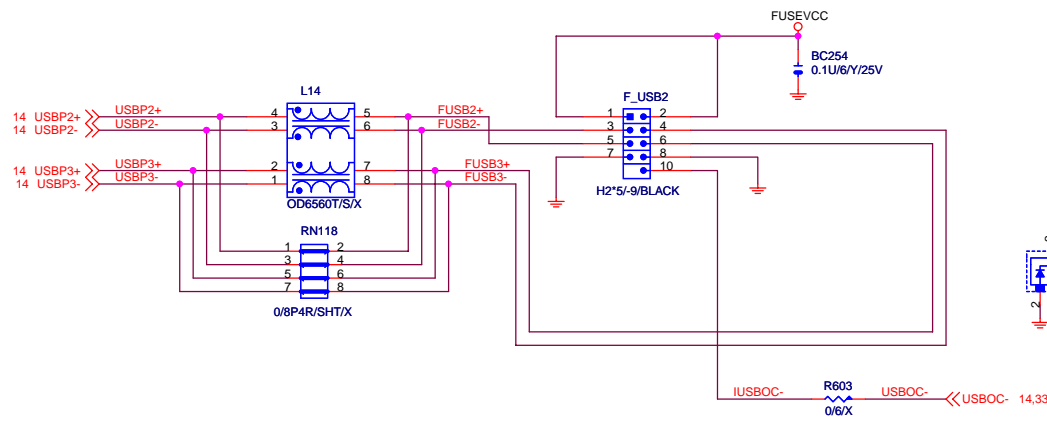
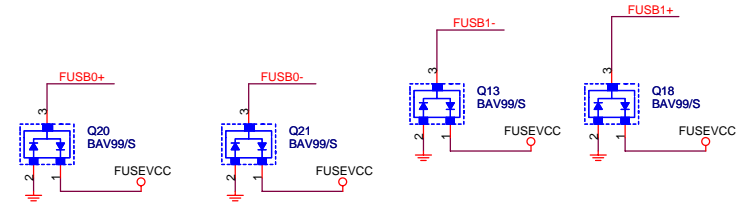
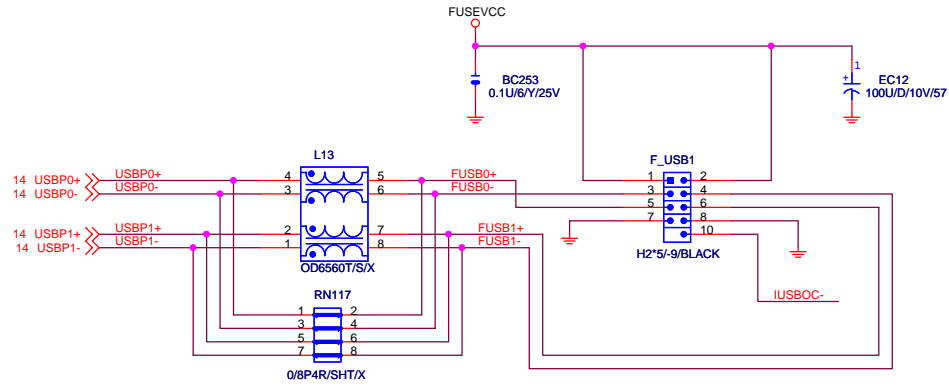


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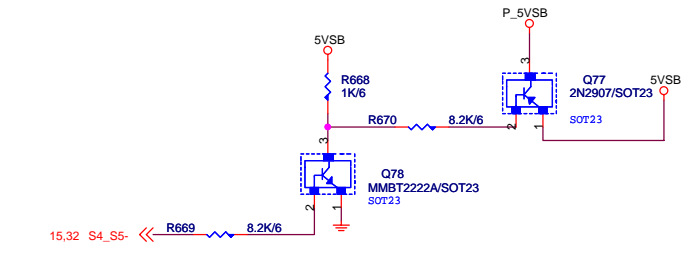
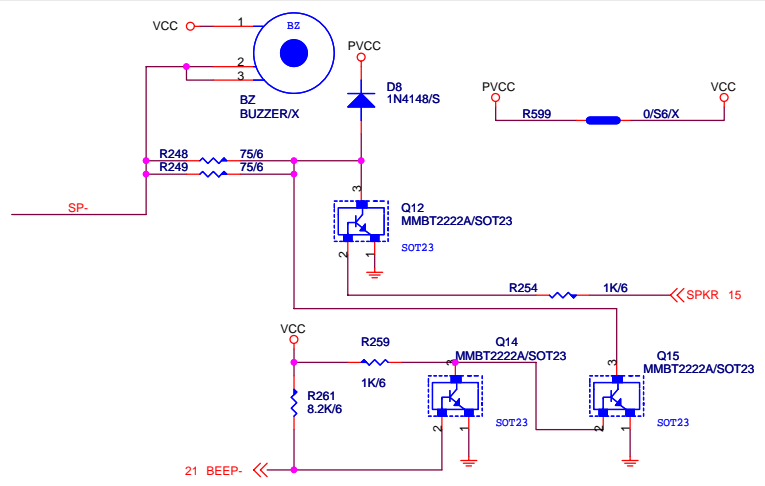
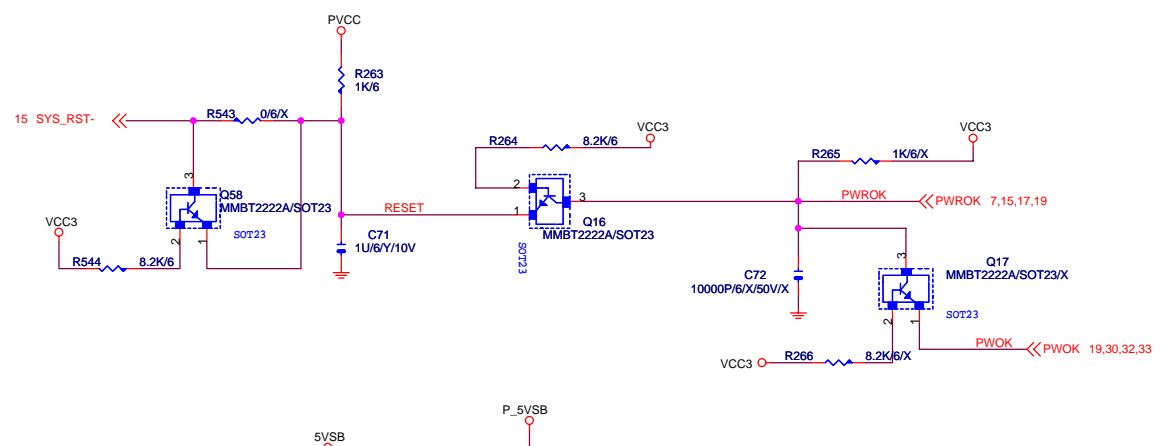


GIGABYTE	
Title	ITE 8712 LPC IO
Size B	Document Number
	<b>GA-81845G</b>
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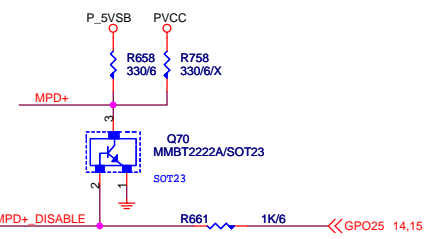
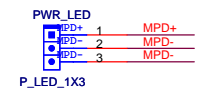
# ICH4 USB2.0



GIGABYTE			
Title			
<b>USB, LAN PORT</b>			
Size B	Document Number	<b>GA-81845G</b>	Rev <b>1.01</b>
Date:	Wednesday, June 15, 2005	Sheet 22	of 35

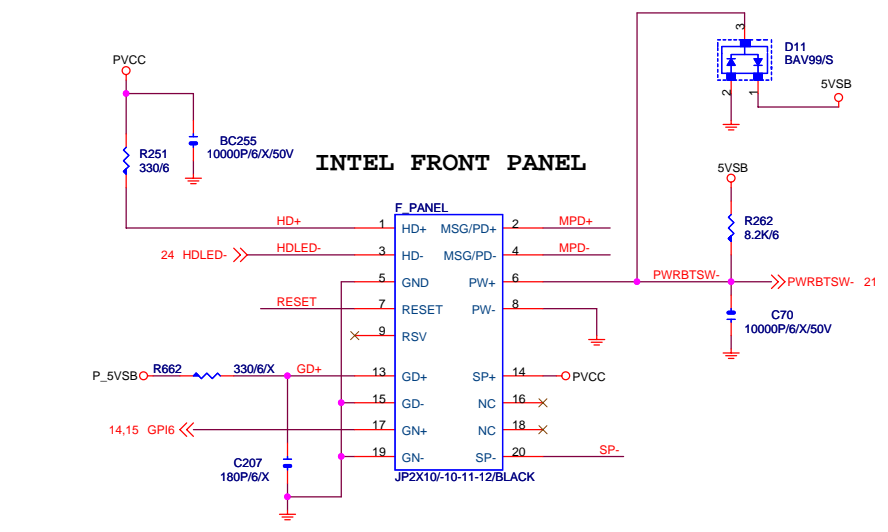


**3 PIN POWER LED**



(GPO28 DEFAULT HIGH, RESUME WELL)  
States for green LED

LED States	ACPI States	GPO28
ON	S1, S3	0
OFF	S0, S5	1



(GPO25 DEFAULT HI, RESUME WELL AND 可以PROGRAMMING BLINKING)

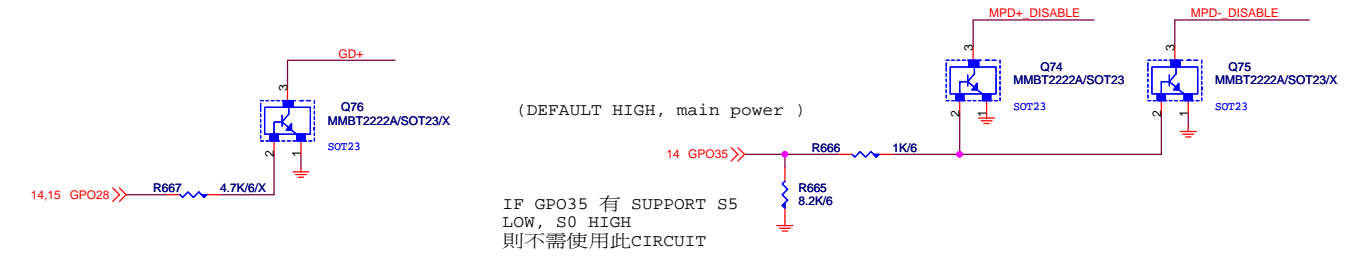
States for a single-color power LED

LED States	ACPI States	GPO25	GPO27	GPO35
OFF	S1, S3, S5	1	1	NO1
Steady Green	S0	0	1	0
Blinking Green	S0(message waiting)	0	B	0

NO1 GPO35 只需在 S1 PROGRAMMING LOW

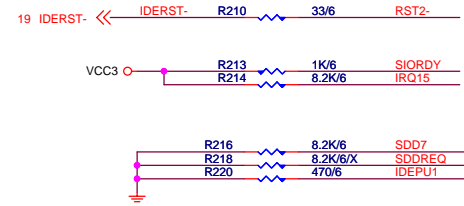
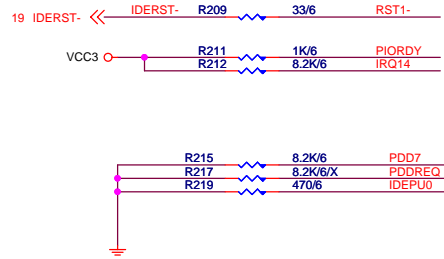
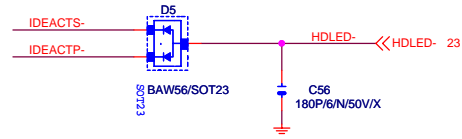
States for a dual-color power LED

LED States	ACPI States	GPO25	GPO27	GPO35
OFF	S5	1	1	X
Steady Green	S0	0	1	0
Blinking Green	S0(message waiting)	0	B	0
Steady Yellow	S1, S3	1	0	NO1
Blinking Yellow	S1, S3(message waiting)	1	B	NO1

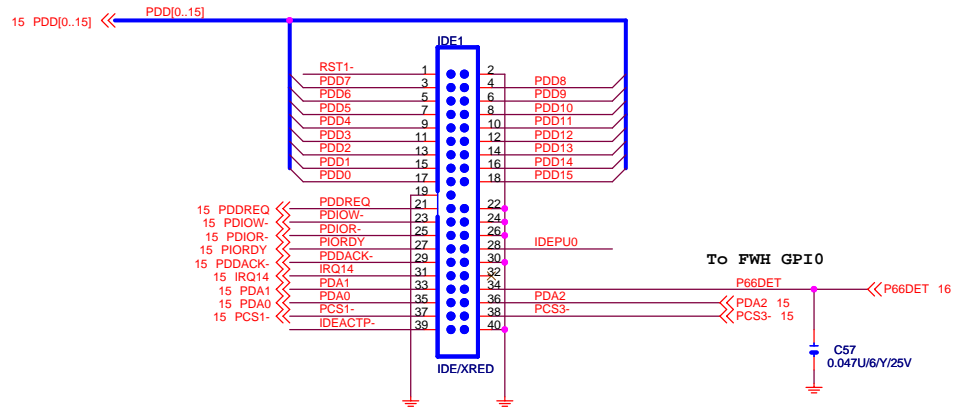


(DEFAULT HIGH, main power)

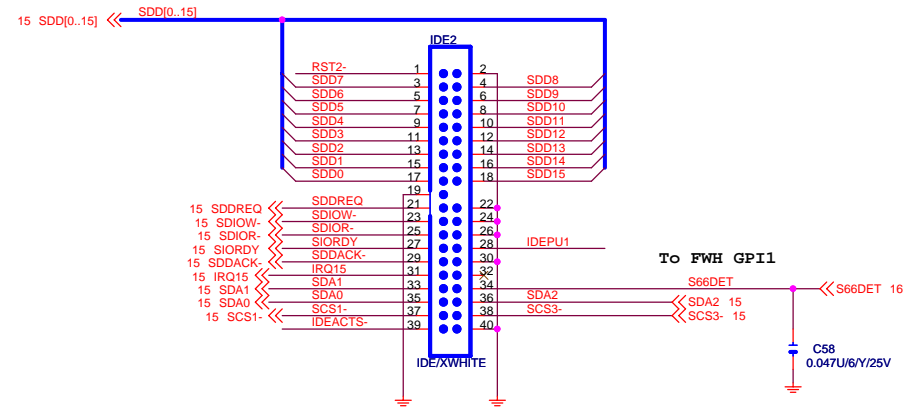
IF GPO35 有 SUPPORT S5 LOW, S0 HIGH 則不需使用此CIRCUIT



PRIMARY IDE CONNECTOR

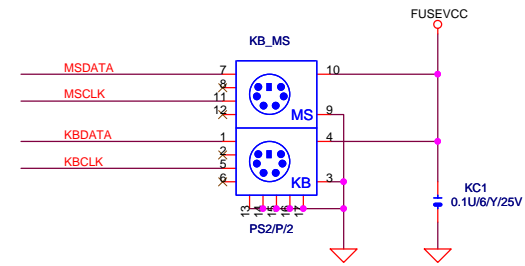
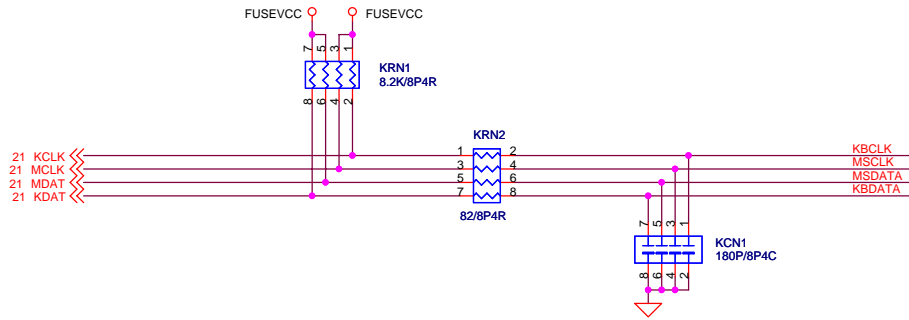
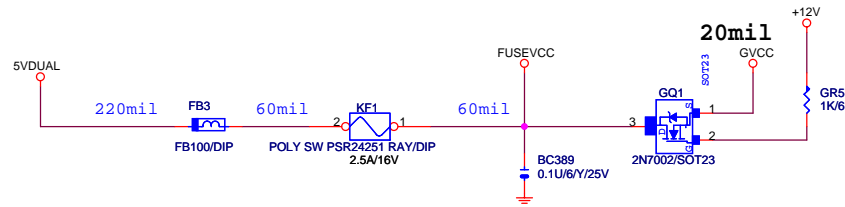


SECONDARY IDE CONNECTOR



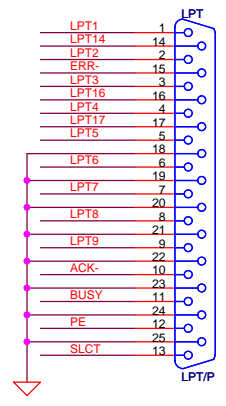
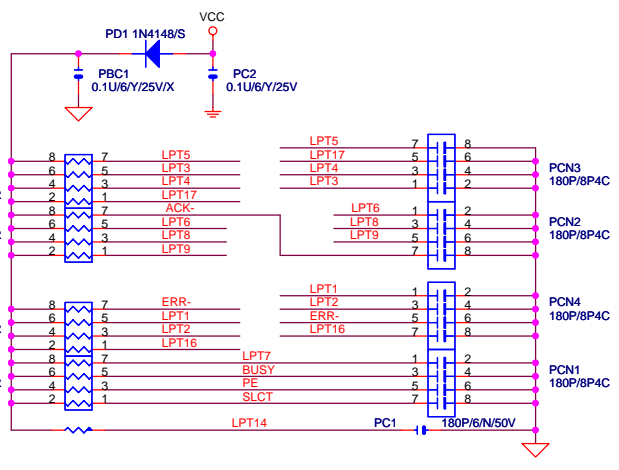
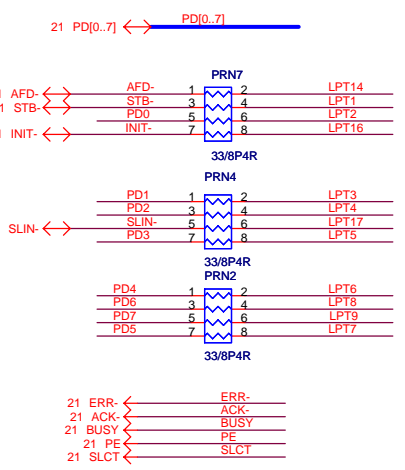
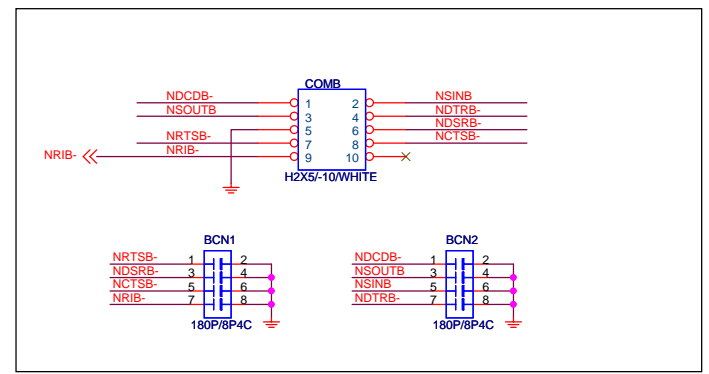
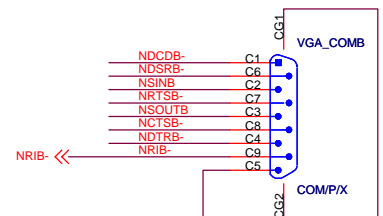
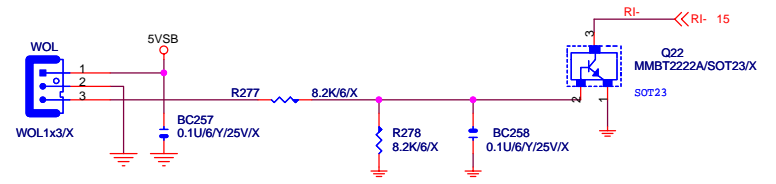
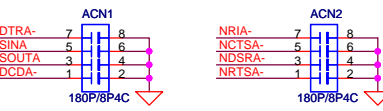
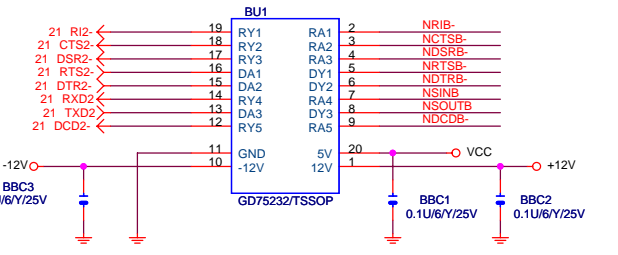
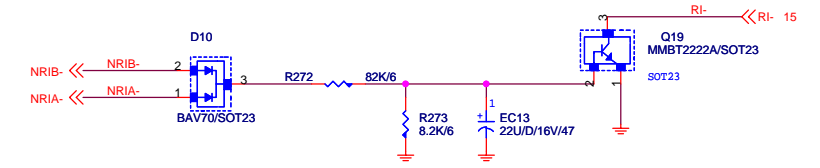
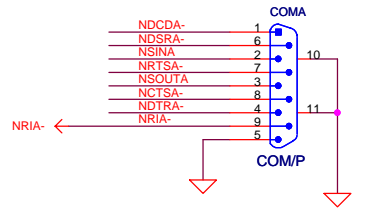
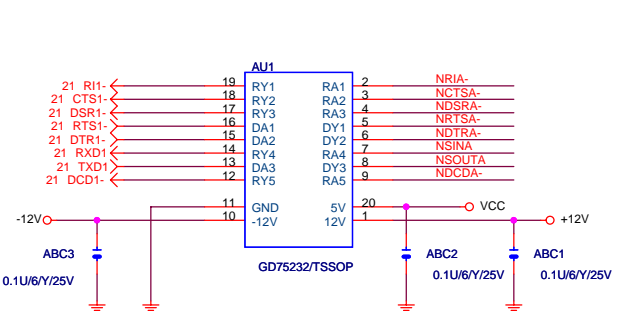
GIGABYTE			
Title			
<b>IDE CONNECTOR</b>			
Size	Document Number	GA-81845G	Rev
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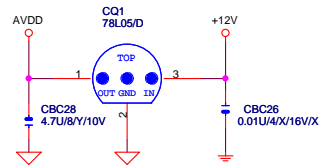
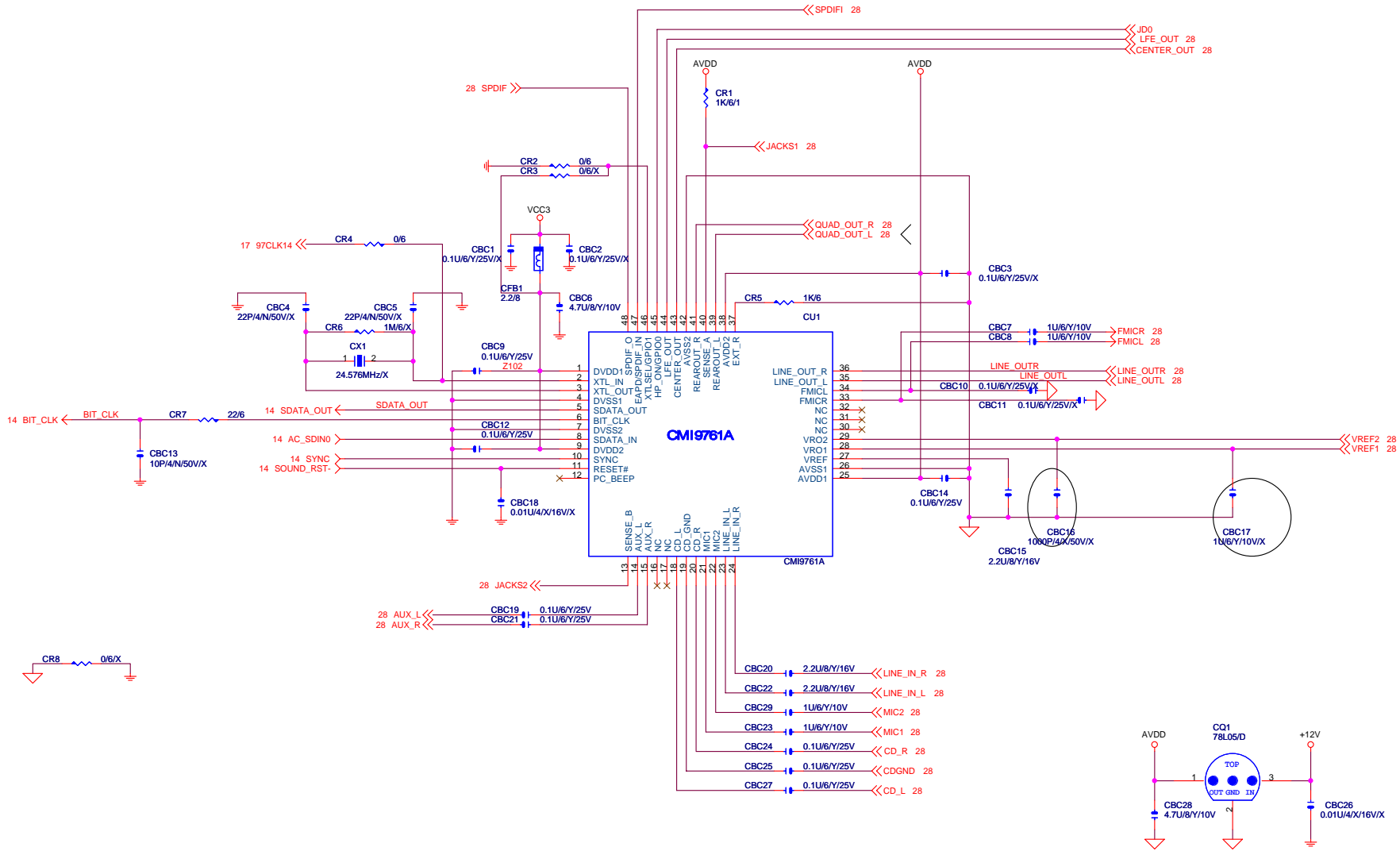
模組化線路

GIGABYTE			
Title			
<b>KB &amp; PS2 MOUSE &amp; IR</b>			
Size	Document Number		Rev
B	<b>GA-81845G</b>		<b>1.01</b>
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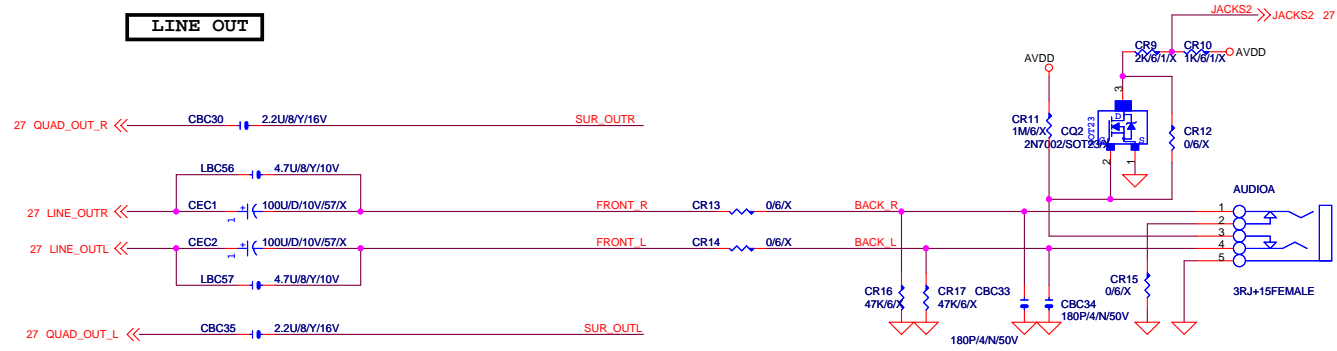
模組化線路

GIGABYTE		
Title		
<b>COM &amp; IR &amp; LPT PORT &amp; FLOOPY</b>		
Size B	Document Number	Rev
	<b>GA-81845G</b>	<b>1.01</b>
Date:	Wednesday, June 15, 2005	Sheet 26 of 35

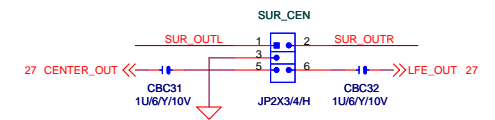


GIGABYTE			
Title			
<b>C-MEDIA 9761A</b>			
Size	Document Number		Rev
Custom	<b>GA-81845G</b>		<b>1.01</b>
Date:	Wednesday, June 15, 2005	Sheet	27 of 35

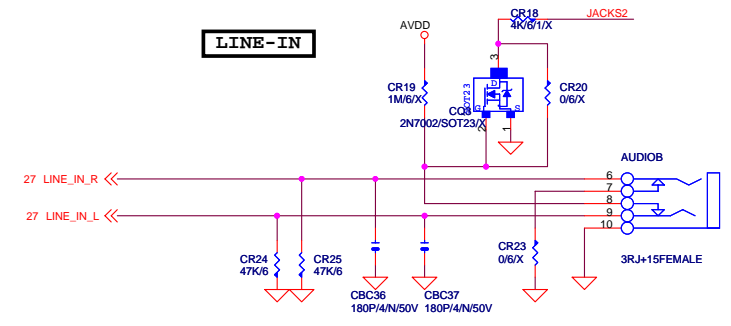
**LINE OUT**



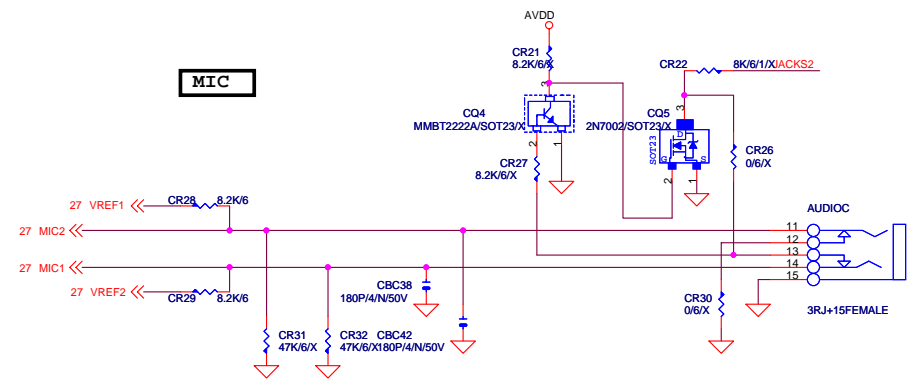
**SUR\_CEN**



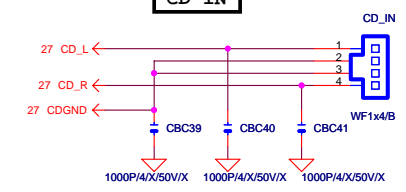
**LINE-IN**



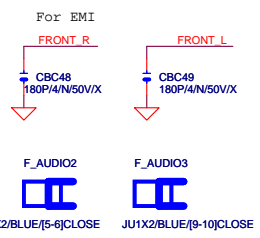
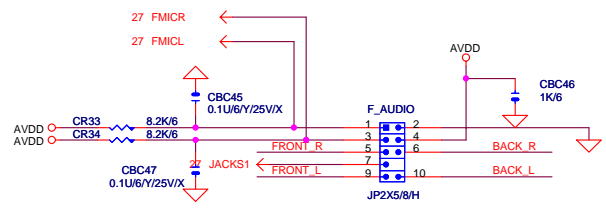
**MIC**



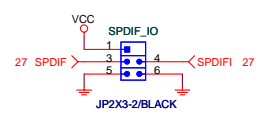
**CD IN**



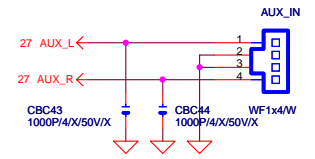
**INTEL FRONT AUDIO**



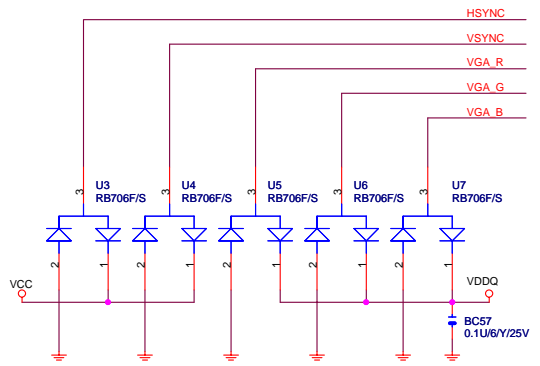
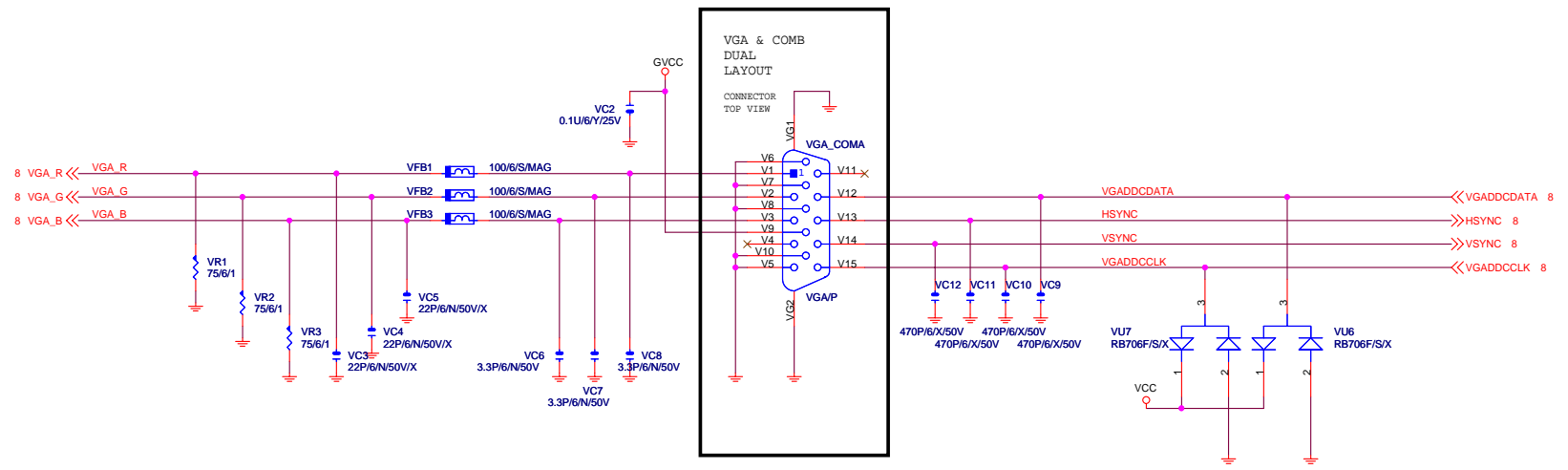
**SPDIF**



**AUX IN DEFAULT NO POP**



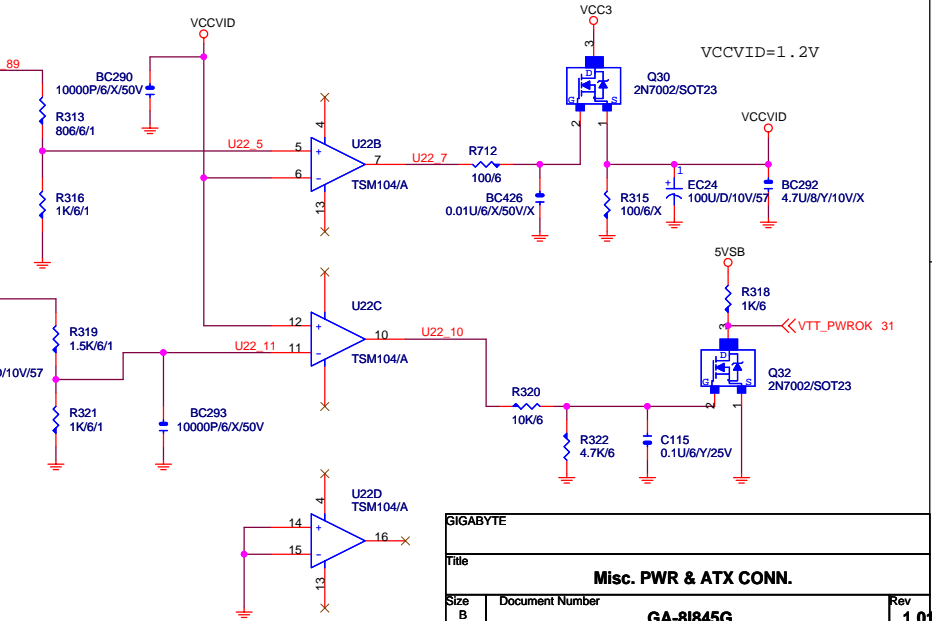
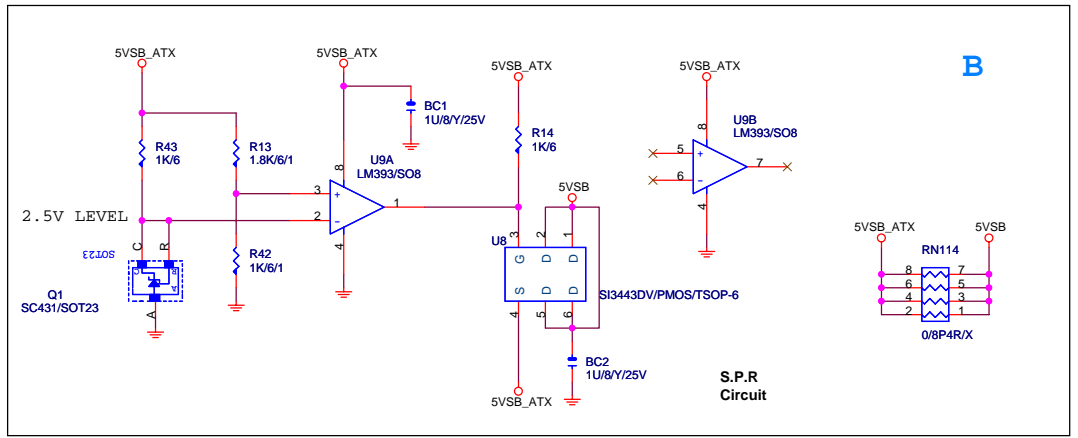
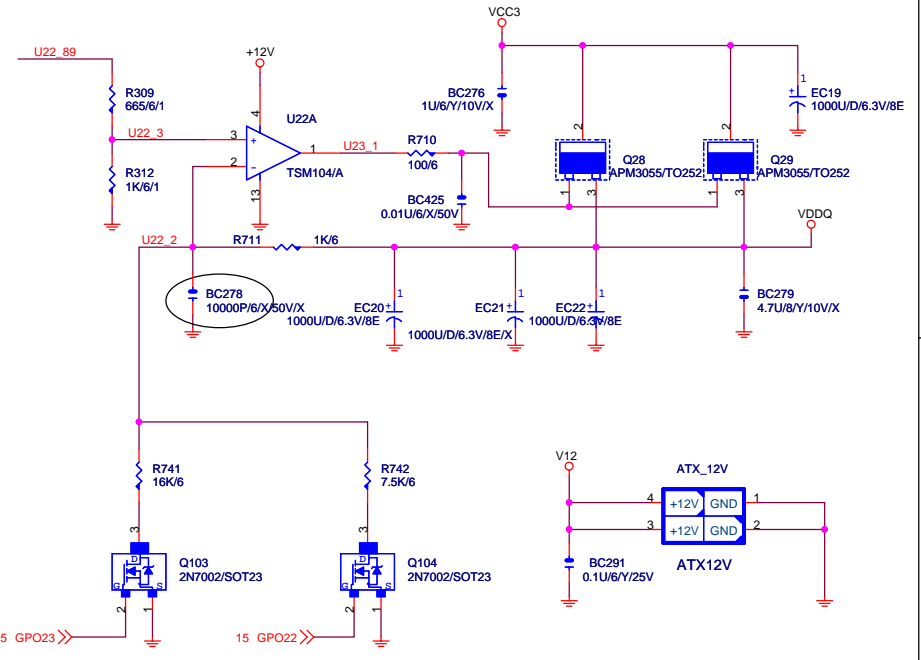
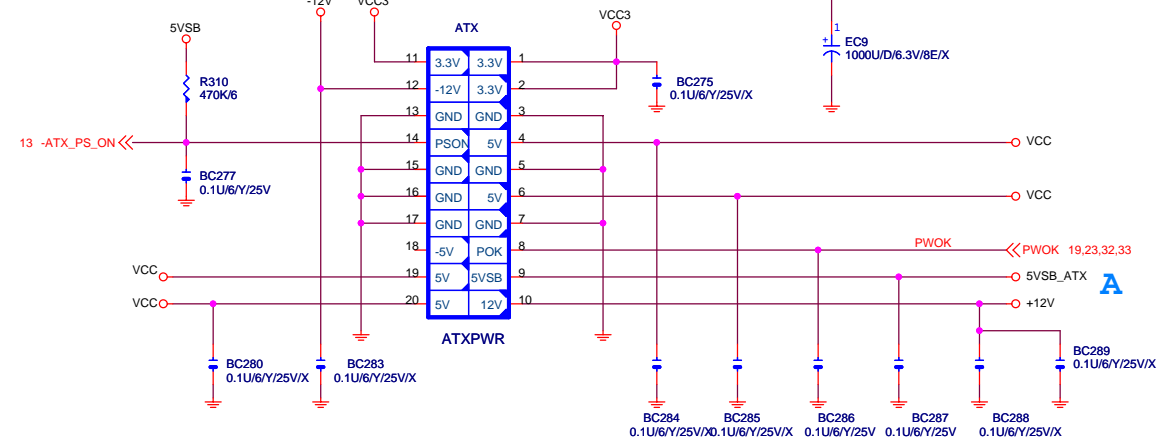
<b>GIGABYTE</b>		
<b>AUDIO OUTPUT, GAME PORT</b>		
Title	Document Number	Rev
	<b>GA-81845G</b>	<b>1.01</b>
Date:	Wednesday, June 15, 2005	Sheet 28 of 35



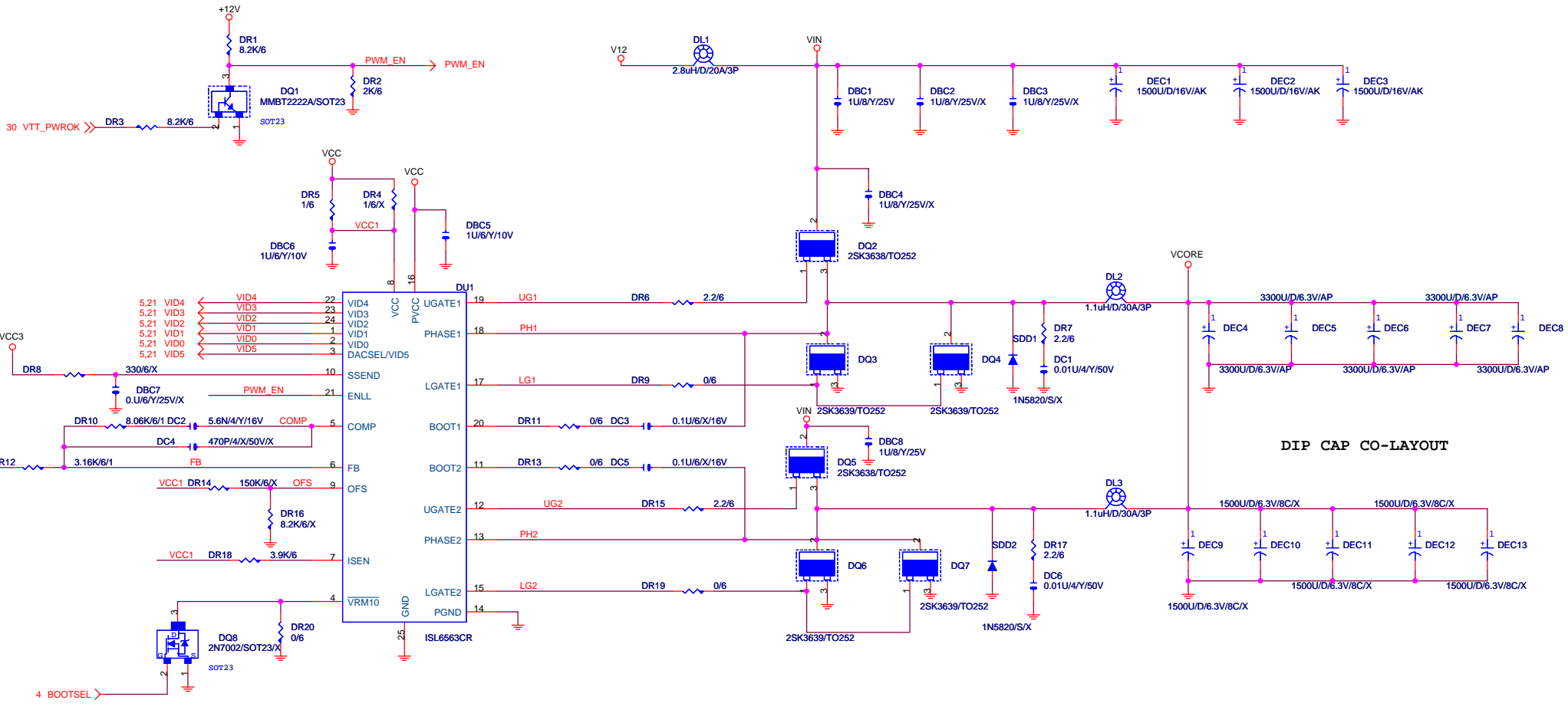
模組化線路

Title			VGA CONNECTOR		
Size	Document Number				Rev
Custom	GA-81845G				1.01
Date:	Wednesday, June 15, 2005	Sheet	29	of	35

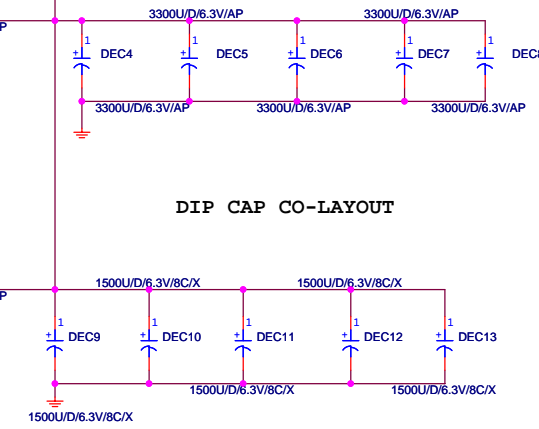
# ATX POWER CONNECTOR



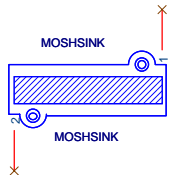
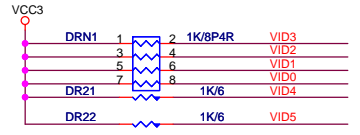
GIGABYTE		
Title		
<b>Misc. PWR &amp; ATX CONN.</b>		
Size B	Document Number	Rev
	<b>GA-81845G</b>	<b>1.01</b>
Date:	Wednesday, June 15, 2005	Sheet 30 of 35



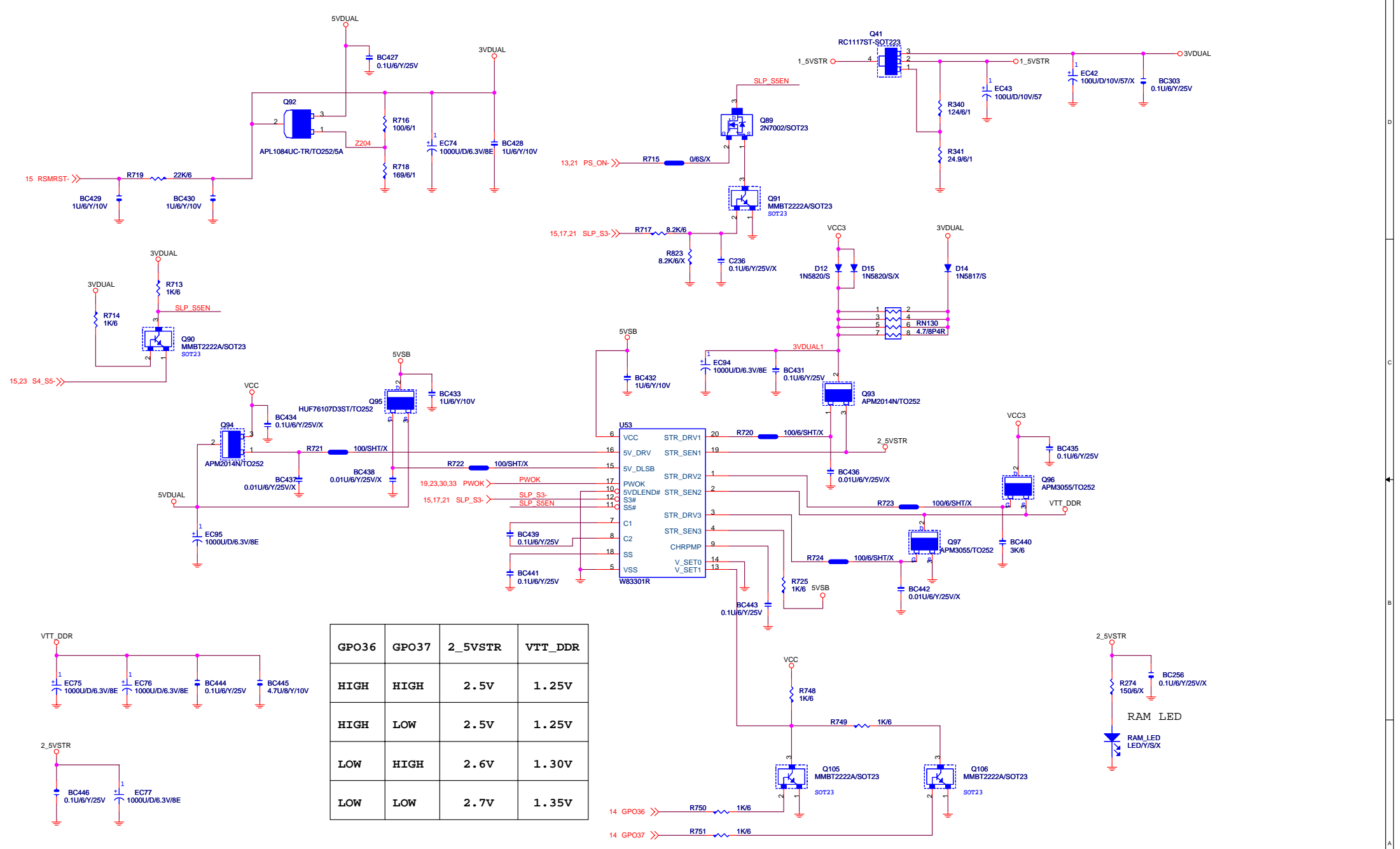
**DIP CAP CO-LAYOUT**



**CPU Voltage ID output**



GIGABYTE			
Title			
<b>Vcore PWM HIP6563</b>			
Size	Document Number	Rev	
Custom	<b>GA-8I845G</b>	<b>1.01</b>	
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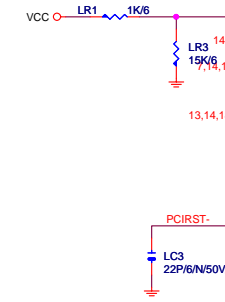
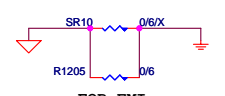


GPO36	GPO37	2_5VSTR	VTT_DDR
HIGH	HIGH	2.5V	1.25V
HIGH	LOW	2.5V	1.25V
LOW	HIGH	2.6V	1.30V
LOW	LOW	2.7V	1.35V



	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

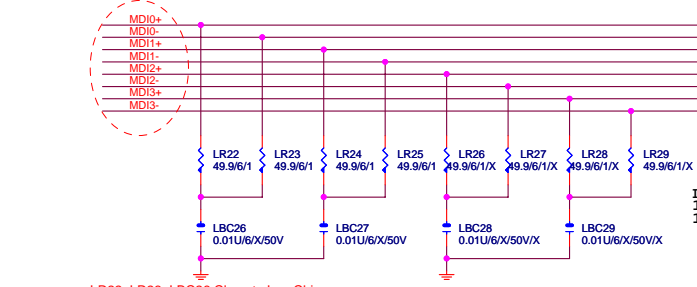
	Yellow	Dual Color LED	
		Green	Orange
10Mb	---	OFF	OFF
100Mb	---	ON	OFF
1Gb	---	OFF	ON
Link	ON	---	---
Active	Blink	---	---



LR26-LR29: 100M:N/A, 1G:49.9/6/1

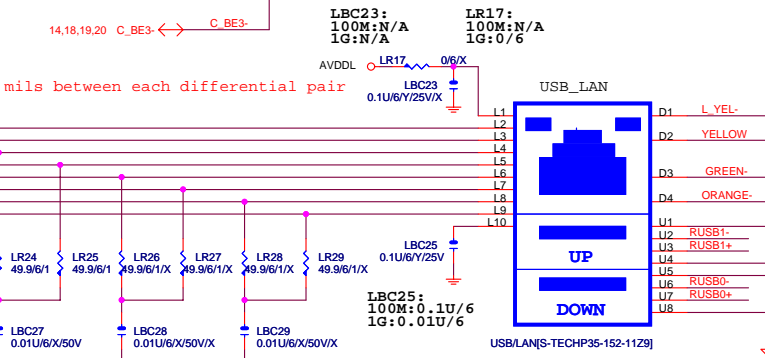
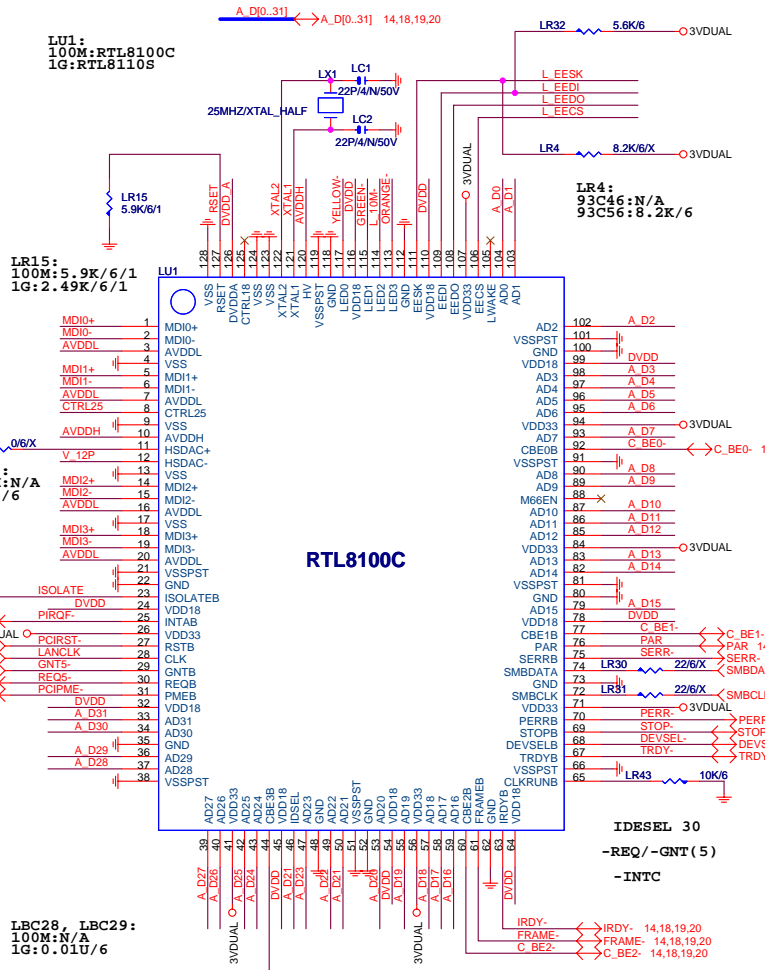
LBC28, LBC29: 100M:N/A, 1G:0.01U/6

Spacing : at least 50 mils between each differential pair



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

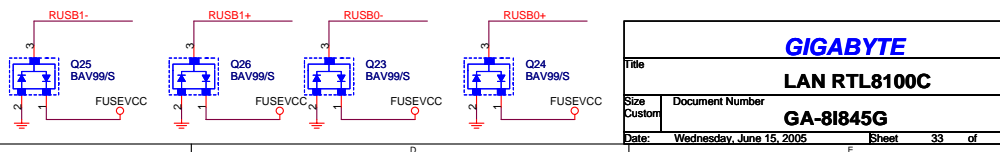
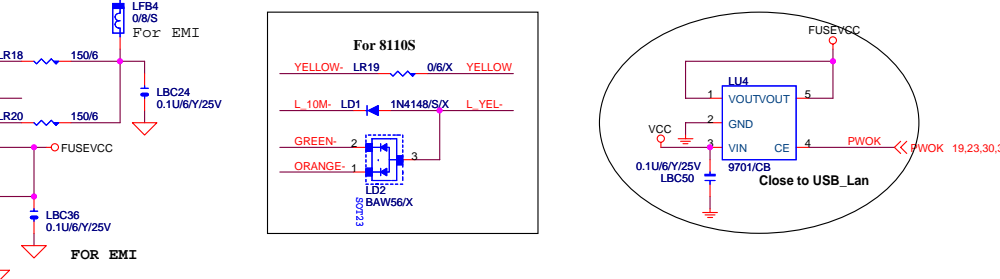
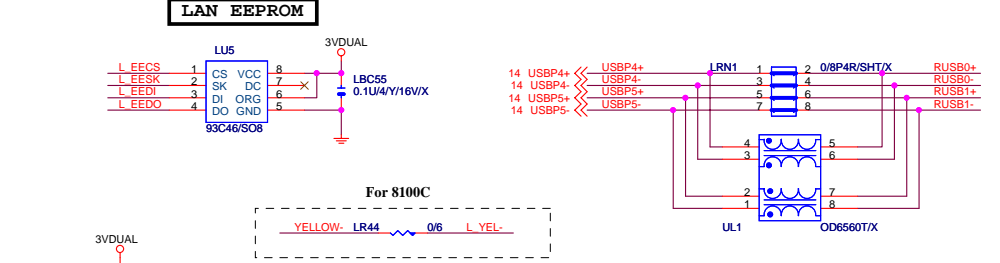
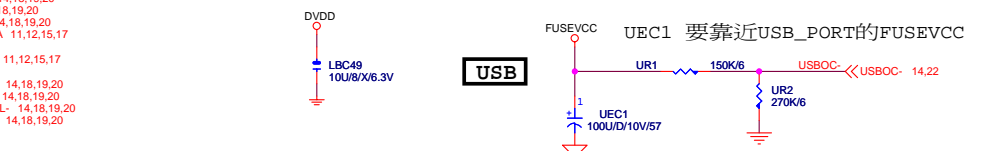
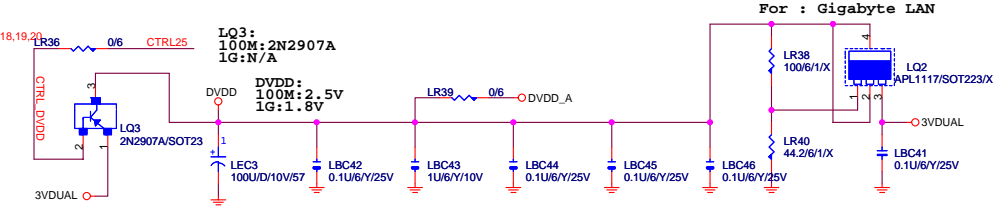
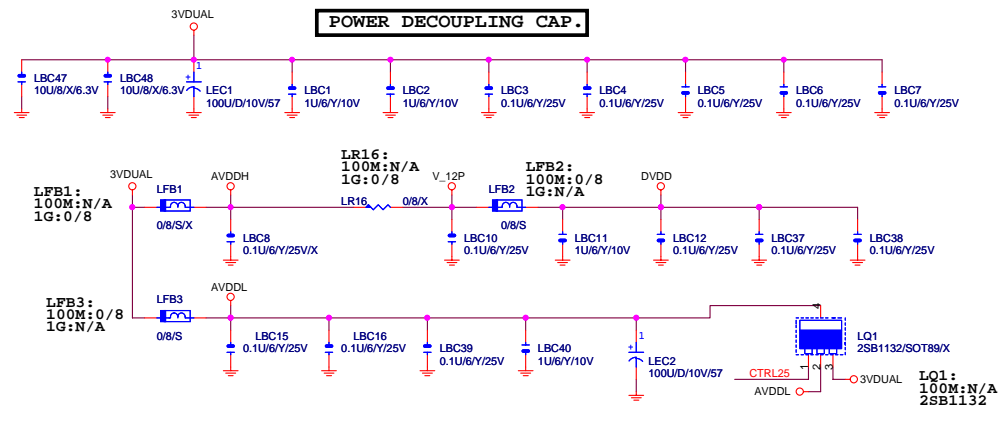
LR24, LR25, LBC27 Close to Lan Chip  
Realtek Suggestion (RX+, RX-).



USB/LANS-TECHP35-152-1129

FOR 1G:P35-152-19W9

FOR 100M:P35-152-11Z9



<b>GIGABYTE</b>		
<b>LAN RTL8100C</b>		
Title	Document Number	Rev
	<b>GA-81845G</b>	<b>1.01</b>
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# GA-8I845G PCI ROUNTING LIST

Revision : 1.01

PCI DEVICE	IDSEL	INT	CLOCK	REQ	GNT	
PCI SLOT1	16	C,F,G,A	PCLK1	REQ0-	GNT0-	
PCI SLOT2	17	F,G,A,C	PCLK2	REQ1-	GNT1-	
PCI SLOT3	18	G,A,C,F	PCLK3	REQ2-	GNT2-	
PCI SLOT4	19	A,C,F,G	PCLK4	REQ3-	GNT3-	
PCI SLOT5	20	C,F,G,A	PCLK5	REQ4-	GNT4-	
LAN	21	F	LANCLK	REQ5-	GNT5-	

# GA-8I845G GPIO LIST

Revision 1.01

SHEET TITLE

GPI		
GPI0/REQA-		PULL DOWN 15K, detect IDE1 connector type.
GPI1/REQ5-		PULL DOWN 15K, detect IDE2 connector type.
GPI2/PIRQE-		PULL 8.2K TO VCC3
GPI3/PIRQF-		PULL 8.2K TO VCC3
GPI4/PIRQG-		PULL 8.2K TO VCC3
GPI5/PIRQH-		PULL 8.2K TO VCC3
GPI6		PULL 8.2K TO VCC3 (GREEN_BUTTON)
GPI7		NOT IMPLEMENTED
GPI8		PULL 8.2K TO 3VDUAL, LPC PME.
GPI9	NA	NOT IMPLEMENTED
GPI10	NA	NOT IMPLEMENTED
GPI11		PULL 4.7K TO 3VDUAL (SMBALERT)
GPI12		PULL DOWN 10K.
GPI13		PULL DOWN 10K, CNR_PRIMARY
GPI14	NA	NOT IMPLEMENTED
GPI15	NA	NOT IMPLEMENTED

SHEET TITLE

GPO		
GPO16		PULL 8.2K TO VCC3
GPO17		PULL 8.2K TO VCC3 (GNT5-)
GPO18		PULL 8.2K TO VCC3
GPO19		PULL 8.2K TO VCC3
GPO20		PULL 8.2K TO VCC3
GPO21		PULL 8.2K TO VCC3
GPO22		PULL 8.2K TO VCC3
GPO23		PULL 8.2K TO VCC3
GPO24		PULL 1K TO 3VDUAL (TOP BLOCK)
GPO25		PULL 4.7K TO 3VDUAL, POWER LED CONTROL.
GPO26		NOT IMPLEMENTED
GPO27		PULL 8.2K TO 3VDUAL, POWER LED CONTROL.
GPO28		PULL 8.2K TO 3VDUAL, GREEN LED.
GPO32		PULL 8.2K TO 3VDUAL, BIOS WRITE PROTECT.
GPO35		PULL DOWN 10K, POWER LED CONTROL.