

8I845PE-RZ Schematics

Revision 1.0

SHEET TITLE

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03	BLOCK DIAGRAM
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06	P4_478C
07	GMCH-BROOKDALE-G_A
08	GMCH-BROOKDALE-G_B
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10	DDR SERIAL TERMINATION
11	DDR1 & DDR2
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13	AGP SLOT
14	ICH4_1
15	ICH4_2
16	FWH
17	ICS950211AF CLOCK GEN
18	PCI1 & PCI2 SLOT
19	PCI3 & PCI4 SLOT
20	PCI5 SLOT
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23	FRONT PANEL

SHEET TITLE

24	IDE CONNECTOR
25	PS/2 K/B & M/S
26	COM & PRT PORT
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28	LINE OUT/IN/MIC/FRONT AUDIO & GAME
29	VGA CONNECTOR
30	MISC. PWR & ATX POWER
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34	PCI ROUNTING
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GIGABYTE

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Model Name: 8I845PE-RZ

Version:1.0

29.3cm X 21.0cm 60+-15% C Type

Component value change history

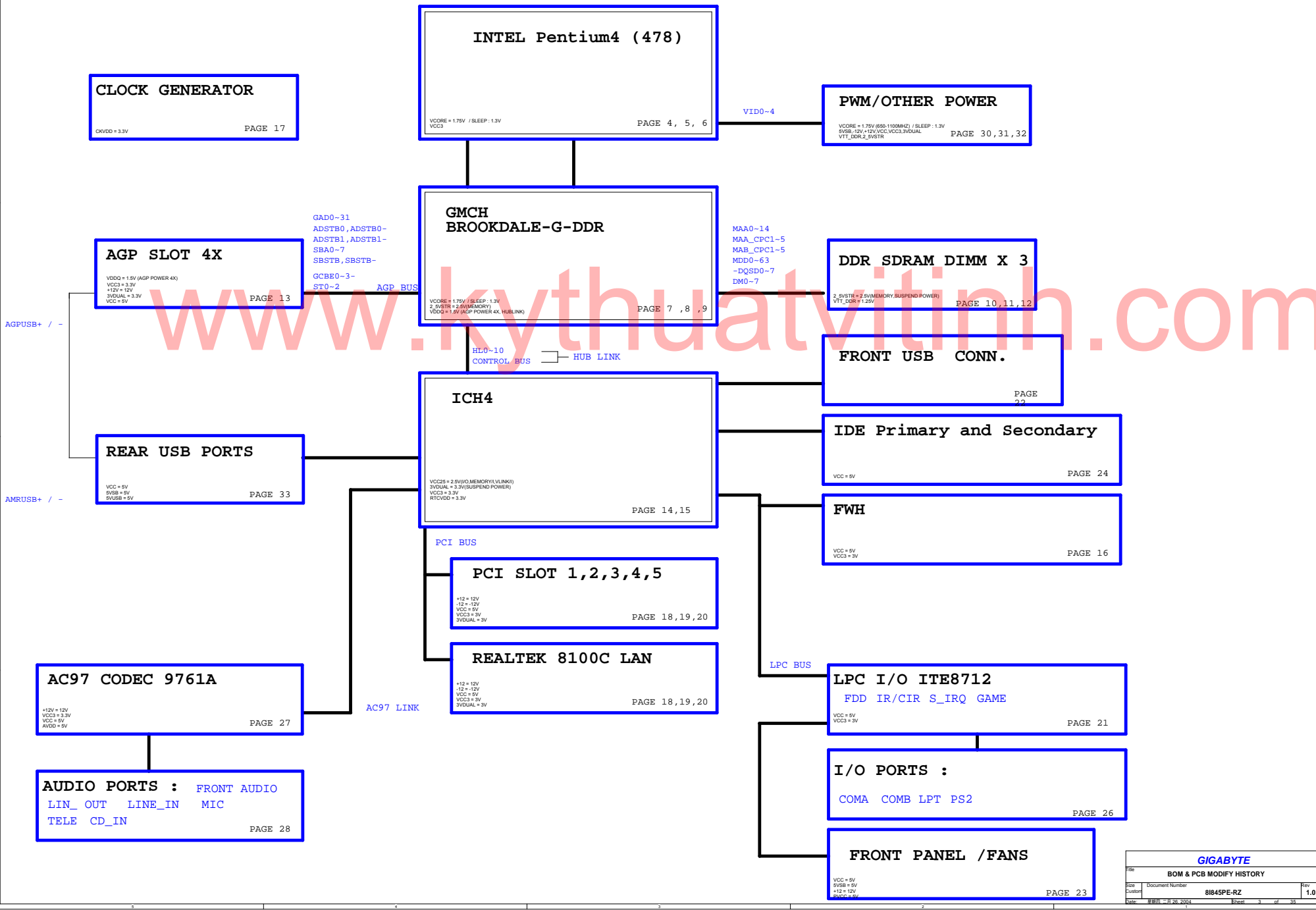
DATE	Change Item	Reason
2004/01/14	1.0A NEW BOM RELEASE	
2004/02/03	1.0A ECN CHANGE DIRVER CD.	
2004/02/??	Remember to add EMI solution	

Circuit or PCB layout change for next version

DATE	Change Item	Reason
2004/01/14	1.0 GERBER OUT.	

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BLOCK DIAGRAM



CLOCK GENERATOR
 CKVDD = 3.3V
 PAGE 17

INTEL Pentium4 (478)
 VCCORE = 1.75V / SLEEP: 1.3V
 VCC3
 PAGE 4, 5, 6

PWM/OTHER POWER
 VCCORE = 1.75V (850-1100MHz) / SLEEP: 1.3V
 SVSB: 12V +12V VCC VCC3.3VDUAL
 VTT_DDR = 1.25V
 PAGE 30, 31, 32

AGP SLOT 4X
 VDDQ = 1.5V (AGP POWER 4X)
 VCC3 = 3.3V
 +12V = 12V
 3VDUAL = 3.3V
 VCC = 5V
 PAGE 13

GMCH BROOKDALE-G-DDR
 VCCORE = 1.75V / SLEEP: 1.3V
 2.5VSTR = 2.5V(MEMORY)
 VDDQ = 1.5V (AGP POWER 4X, HUBLINK)
 PAGE 7, 8, 9

DDR SDRAM DIMM X 3
 2.5VSTR = 2.5V(MEMORY SUSPEND POWER)
 VTT_DDR = 1.25V
 PAGE 10, 11, 12

AGPUSB+ / -

GAD0-31
 ADSTB0, ADSTB0-
 ADSTB1, ADSTB1-
 SBA0-7
 SBSTB, SBSTB-
 GCRE0-3-
 ST0-2
 AGP BUS

MAA0-14
 MAA_CPC1-5
 MAB_CPC1-5
 MDD0-63
 -DQSD0-7
 DM0-7

HUB-10
 CONTROL BUS HUB LINK

REAR USB PORTS
 VCC = 5V
 SVSB = 5V
 VBUS = 5V
 PAGE 33

AMRUSB+ / -

ICH4
 VCC25 = 2.5V(VO.MEMORY/VLINK)
 3VDUAL = 3.3V(SUSPEND POWER)
 VCC3 = 3.3V
 RTCVDD = 3.3V
 PAGE 14, 15

FRONT USB CONN.
 PAGE 22

IDE Primary and Secondary
 VCC = 5V
 PAGE 24

FWH
 VCC = 5V
 VCC3 = 3V
 PAGE 16

PCI SLOT 1,2,3,4,5
 +12 = 12V
 -12 = 12V
 VCC = 5V
 VCC3 = 3V
 3VDUAL = 3V
 PAGE 18, 19, 20

REALTEK 8100C LAN
 +12 = 12V
 -12 = 12V
 VCC = 5V
 VCC3 = 3V
 3VDUAL = 3V
 PAGE 18, 19, 20

LPC I/O ITE8712
 FDD IR/CIR S_IRQ GAME
 VCC = 5V
 VCC3 = 3V
 PAGE 21

AC97 CODEC 9761A
 +12V = 12V
 VCC3 = 3.3V
 VCC = 5V
 ANDD = 5V
 PAGE 27

AC97 LINK

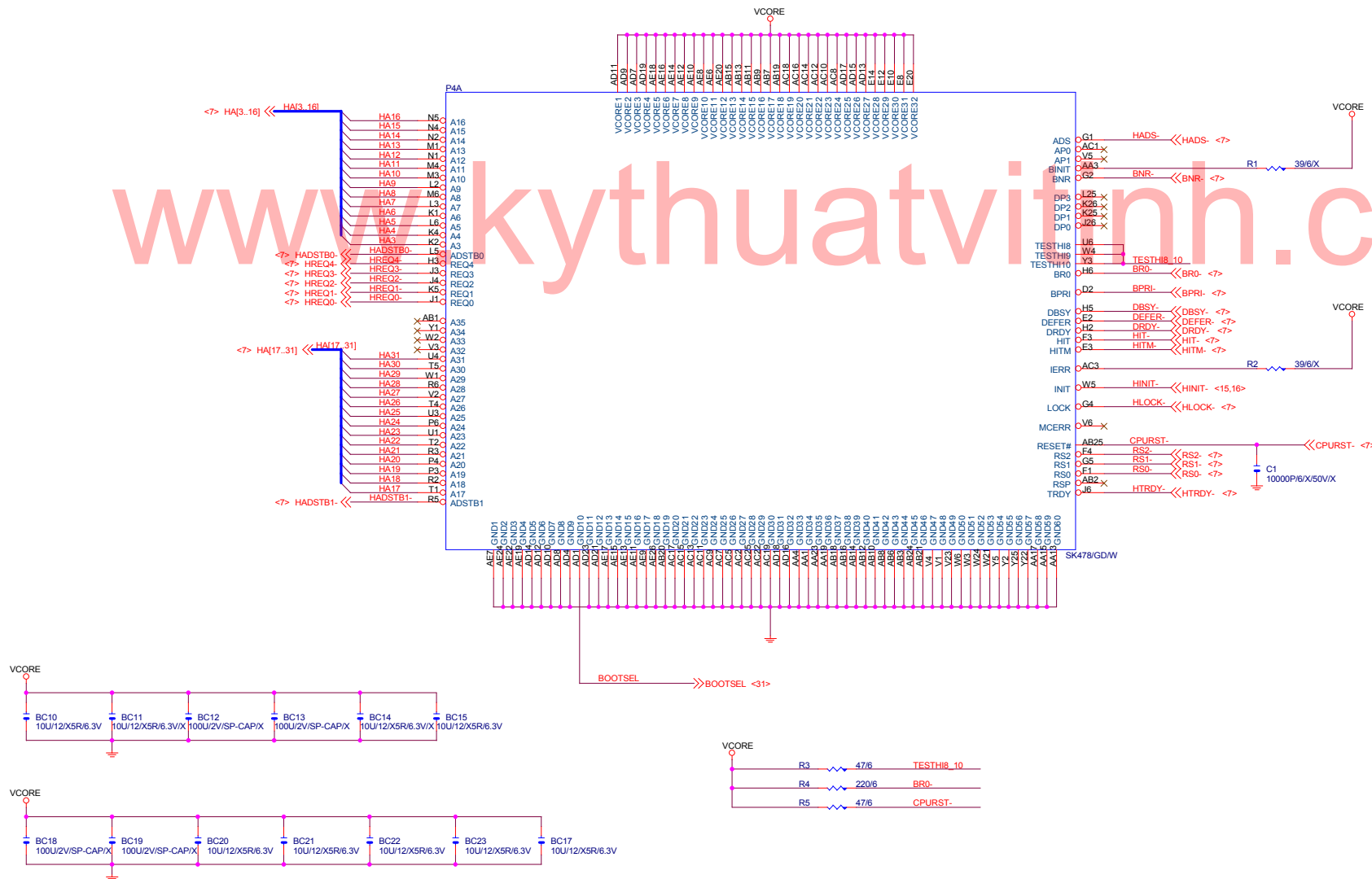
AUDIO PORTS : FRONT AUDIO
 LIN_OUT LINE_IN MIC
 TELE_CD_IN
 PAGE 28

I/O PORTS :
 COMA COMB LPT PS2
 PAGE 26

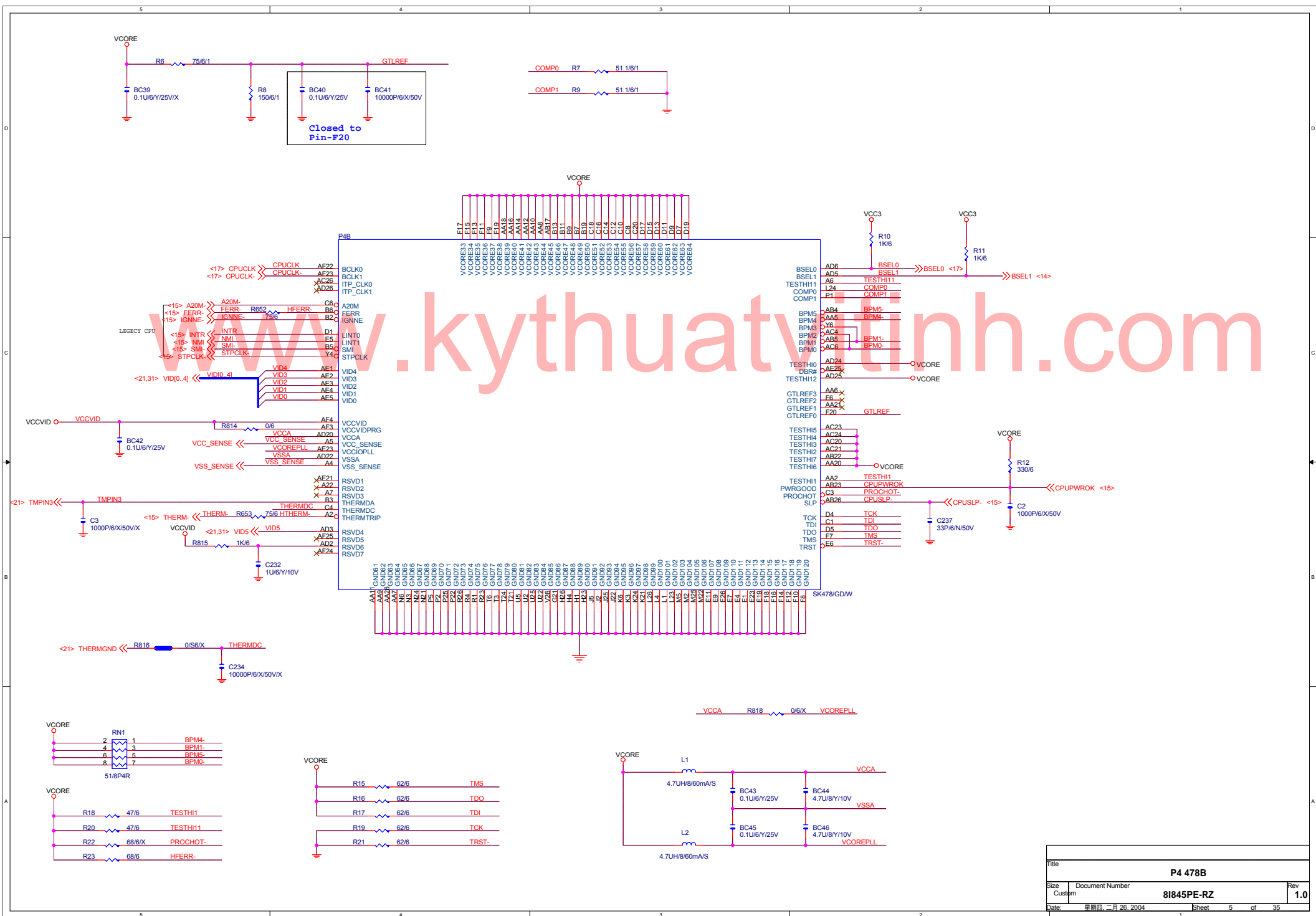
FRONT PANEL /FANS
 VCC = 5V
 SVSB = 5V
 +12 = 12V
 VCC3 = 3V
 PAGE 23

GIGABYTE			
BOM & PCB MODIFY HISTORY			
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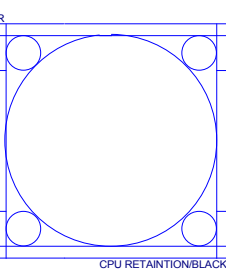
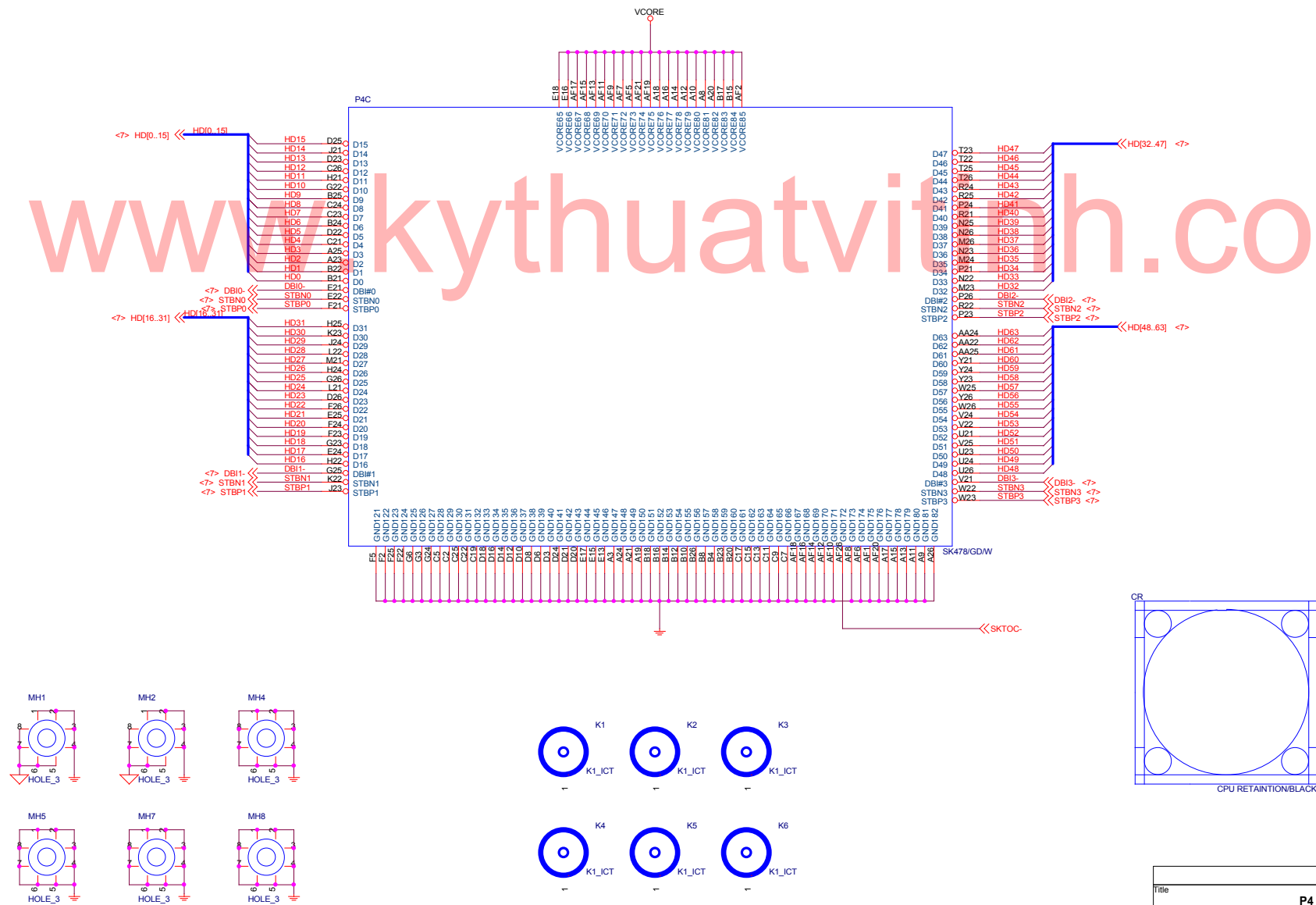


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P4 478A		
Size	Document Number	Rev
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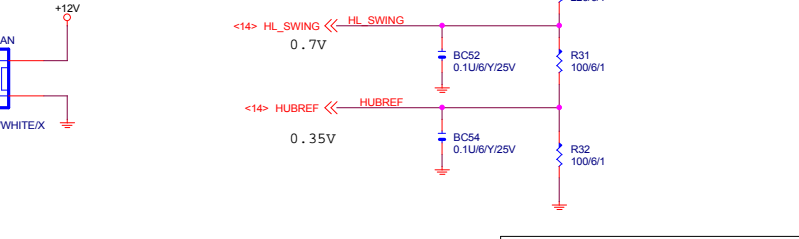
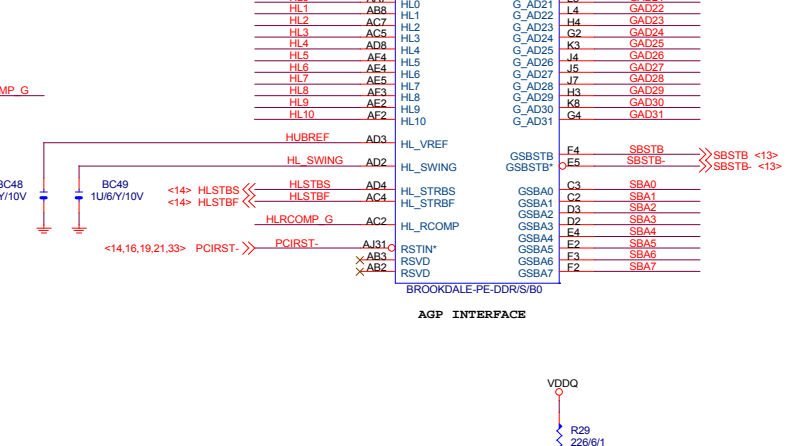
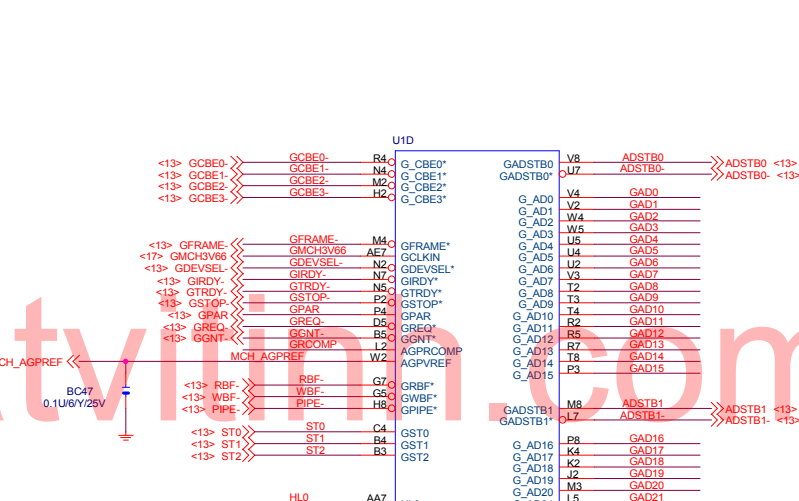
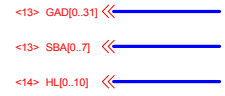
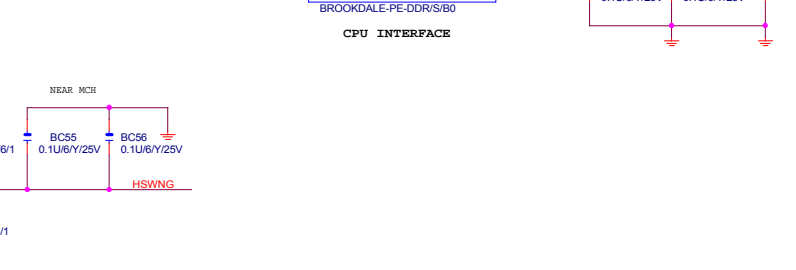
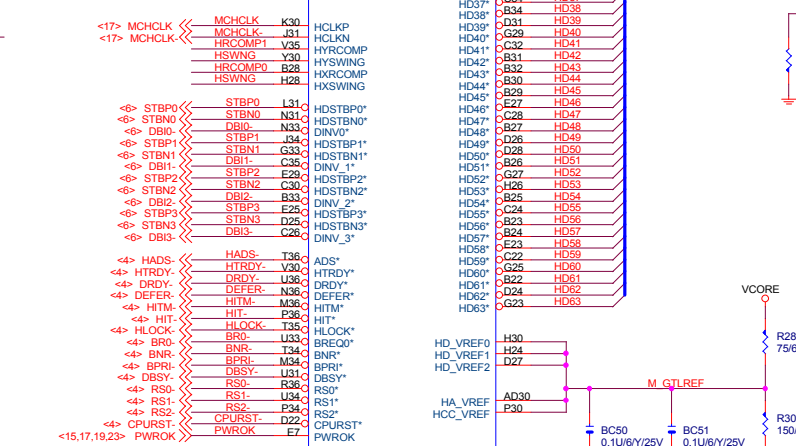
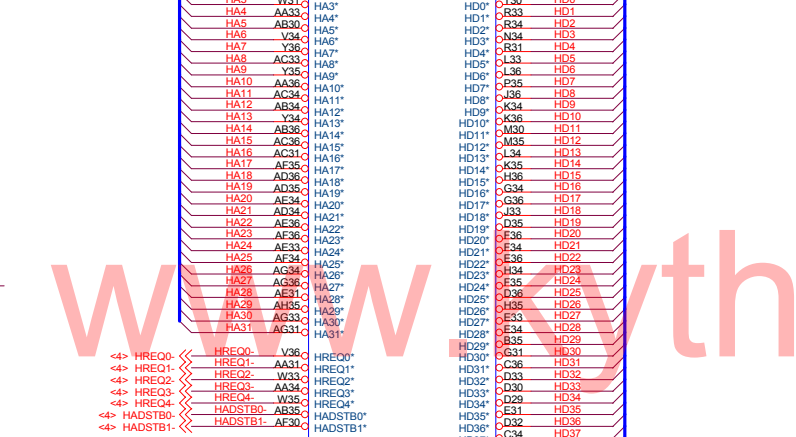


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Title		
P4 478C		
Size	Document Number	Rev
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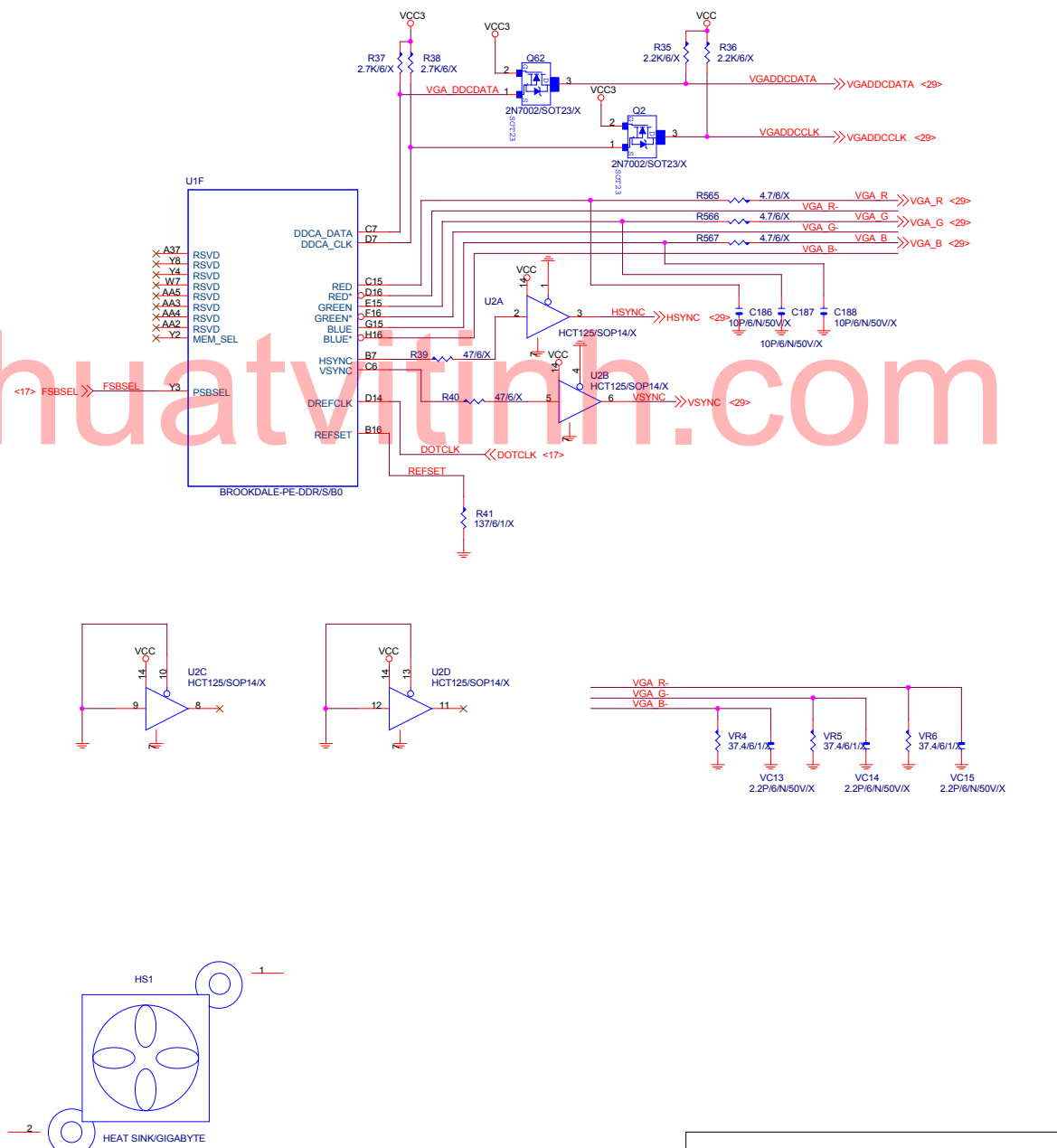
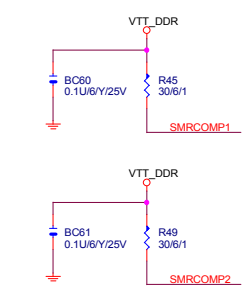


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Size	Document Number	Rev
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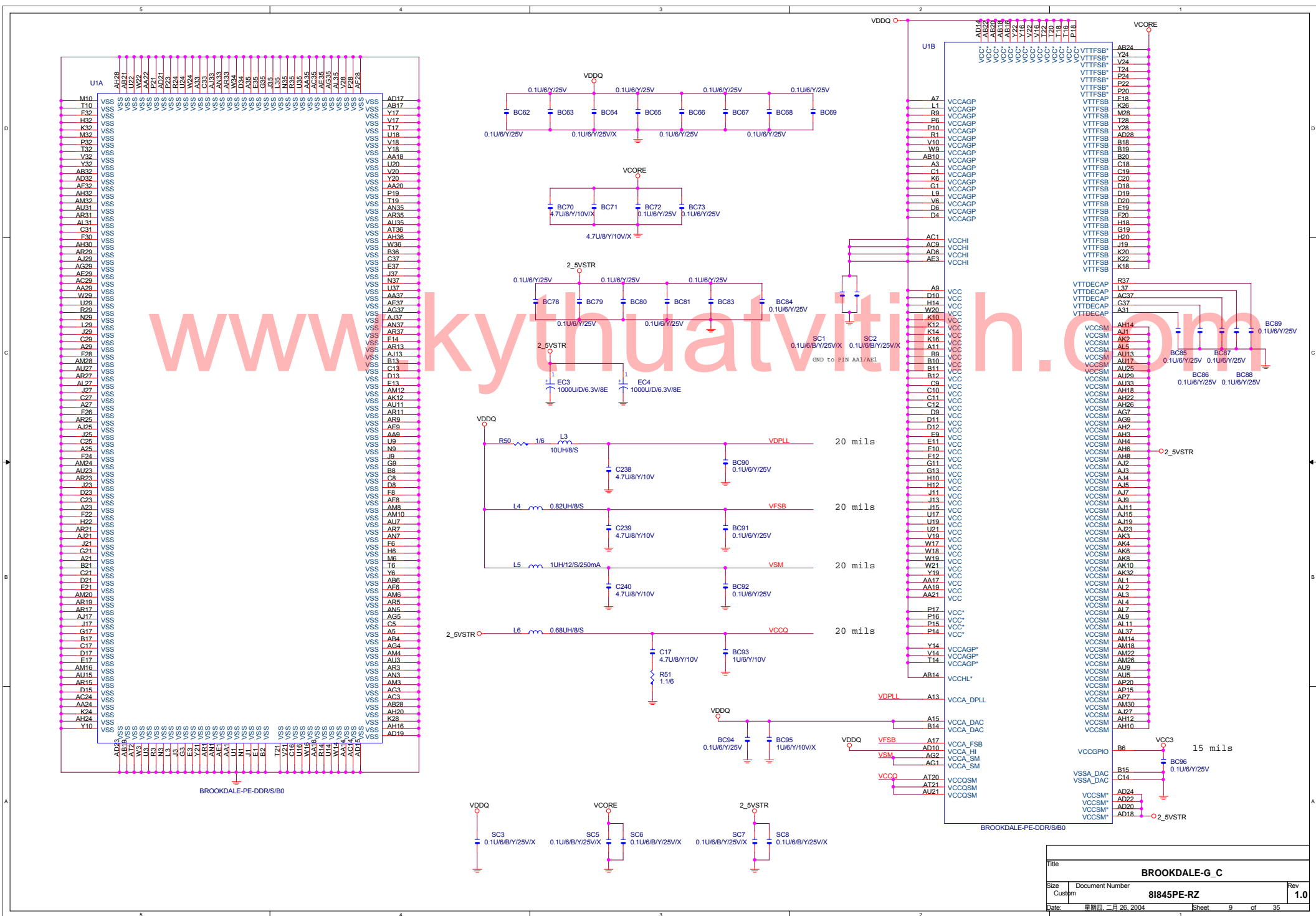
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 <11,12> MAA_CPC[1..5] >> MAA_CPC[1..5]
 <11,12> MAB_CPC[1..5] >> MAB_CPC[1..5]
 <10> DM[0..7] >> DM[0..7]
 <10> MD[0..63] >> MD[0..63]
 <10> -DQS[0..7] >> -DQS[0..7]

U1C		U1F	
MAA0	AL25	SMAA0	AR2
MAA_CPC1	AN25	SMAA1	AR4
MAA_CPC2	AK23	SMAA2	DM0
MAA3	AK20	SMAA3	
MAA_CPC4	AL19	SMAA4	AN4
MAA_CPC5	AL17	SMAA5	MD0
MAA6	AP18	SMAA6	MD1
MAA7	AP17	SMAA7	MD2
MAA8	AN17	SMAA8	MD3
MAA9	AK16	SMAA9	AN2
MAA10	AK25	SMAA10	MD4
MAA11	AL15	SMAA11	AP3
MAA12	AN15	SMAA12	MD5
MAB_CPC1	AP25	SMAB1	MD6
MAB_CPC2	AN23	SMAB2	MD7
MAB_CPC4	AN19	SMAB4	
MAB_CPC5	AK18	SMAB5	
<11,12> -SWEA	AP29C	SWE*	AT7
<11,12> -SCASA	AN29C	SCAS*	-DQS1
<11,12> -SRASA	AK28C	SRAS*	DM1
<11,12> SBS0	SBS0	SBA0	AT8
<11,12> SBS1	SBS1	SBA1	DM2
<11,12> CS0	CS0	SCS0*	AT5
<11,12> CS1	CS1	SCS1*	MD8
<11,12> CS2	CS2	SCS2*	MD9
<11,12> CS3	CS3	SCS3*	MD10
<11,12> CKE0	CKE0	SCKE0	AT6
<11,12> CKE1	CKE1	SCKE1	MD12
<11,12> CKE2	CKE2	SCKE2	MD13
<11,12> CKE3	CKE3	SCKE3	MD14
<11,12> DCLK0	DCLK0	SCMD_CLK0	AP8
<11,12> DCLK1	DCLK1	SCMD_CLK1*	MD15
<11,12> DCLK2	DCLK2	SCMD_CLK2*	AT12
<11,12> DCLK3	DCLK3	SCMD_CLK3*	-DQS2
<11,12> DCLK4	DCLK4	SCMD_CLK4*	DM2
<11,12> DCLK5	DCLK5	SCMD_CLK5*	AT17
<11,12> DCLK6	DCLK6	SCMD_CLK6*	-DQS3
<11,12> DCLK7	DCLK7	SCMD_CLK7*	DM3
<11,12> DCLK8	DCLK8	SCMD_CLK8*	AT15
<11,12> DCLK9	DCLK9	SCMD_CLK9*	MD24
<11,12> DCLK10	DCLK10	SCMD_CLK10*	MD25
<11,12> DCLK11	DCLK11	SCMD_CLK11*	MD26
<11,12> DCLK12	DCLK12	SCMD_CLK12*	MD27
<11,12> DCLK13	DCLK13	SCMD_CLK13*	MD28
<11,12> DCLK14	DCLK14	SCMD_CLK14*	MD29
<11,12> DCLK15	DCLK15	SCMD_CLK15*	MD30
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<11,12> DCLK18	DCLK18	SCMD_CLK18*	MD33
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<11,12> DCLK43	DCLK43	SCMD_CLK43*	MD58
<11,12> DCLK44	DCLK44	SCMD_CLK44*	MD59
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<11,12> DCLK47	DCLK47	SCMD_CLK47*	MD62
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<11,12> DCLK84	DCLK84	SCMD_CLK84*	MD99
<11,12> DCLK85	DCLK85	SCMD_CLK85*	MD100
<11,12> DCLK86	DCLK86	SCMD_CLK86*	MD101
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<11,12> DCLK96	DCLK96	SCMD_CLK96*	MD111
<11,12> DCLK97	DCLK97	SCMD_CLK97*	MD112
<11,12> DCLK98	DCLK98	SCMD_CLK98*	MD113
<11,12> DCLK99	DCLK99	SCMD_CLK99*	MD114
<11,12> DCLK100	DCLK100	SCMD_CLK100*	MD115

Total trace = 100 mils



Title			BROOKDALE-G_B		
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Title		
BROOKDALE-G_C		
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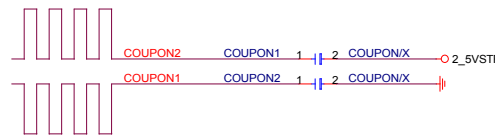
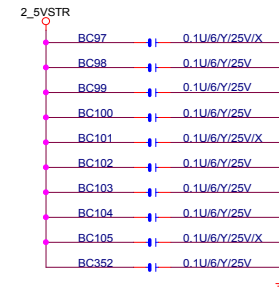
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MD 2		5	6	MD2
MD 6		7	8	MD6
MD 0	RN5	1	2 10/8P4R	MD0
MD 4		3	4	MD4
MD 5		5	6	MD5
MD 1		7	8	MD1
MD 12	RN6	1	2 10/8P4R	MD12
MD 13		3	4	MD13
-DQS 1		5	6	-DQS1
DM 1		7	8	DM1
MD 14	RN7	1	2 10/8P4R	MD14
MD 15		3	4	MD15
MD 10		5	6	MD10
MD 11		7	8	MD11
-DQS 2	RN9	1	2 10/8P4R	-DQS2
DM 2		3	4	DM2
MD 18		5	6	MD18
MD 22		7	8	MD22
MD 29	RN11	1	2 10/8P4R	MD29
MD 25		3	4	MD25
-DQS 3		5	6	-DQS3
DM 3		7	8	DM3
MD 26	RN12	1	2 10/8P4R	MD26
MD 30		3	4	MD30
MD 27		5	6	MD27
MD 31		7	8	MD31
MD 32	RN13	1	2 10/8P4R	MD32
MD 36		3	4	MD36
MD 33		5	6	MD33
MD 37		7	8	MD37
MD 39	RN14	1	2 10/8P4R	MD39
MD 35		3	4	MD35
MD 40		5	6	MD40
MD 44		7	8	MD44
-DQS 4	RN15	1	2 10/8P4R	-DQS4
DM 4		3	4	DM4
MD 34		5	6	MD34
MD 38		7	8	MD38
MD 45	RN16	1	2 10/8P4R	MD45
MD 41		3	4	MD41
DM 5		5	6	DM5
-DQS 5		7	8	-DQS5
MD 48	RN17	1	2 10/8P4R	MD48
MD 49		3	4	MD49
MD 52		5	6	MD52
MD 53		7	8	MD53
MD 50	RN18	1	2 10/8P4R	MD50
MD 51		3	4	MD51
MD 60		5	6	MD60
MD 61		7	8	MD61
DM 6	RN19	1	2 10/8P4R	DM6
-DQS 6		3	4	-DQS6
MD 64		5	6	MD64
MD 65		7	8	MD65
MD 56	RN20	1	2 10/8P4R	MD56
MD 57		3	4	MD57
DM 7		5	6	DM7
-DQS 7		7	8	-DQS7
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MD 63		3	4	MD63
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MD 62		7	8	MD62

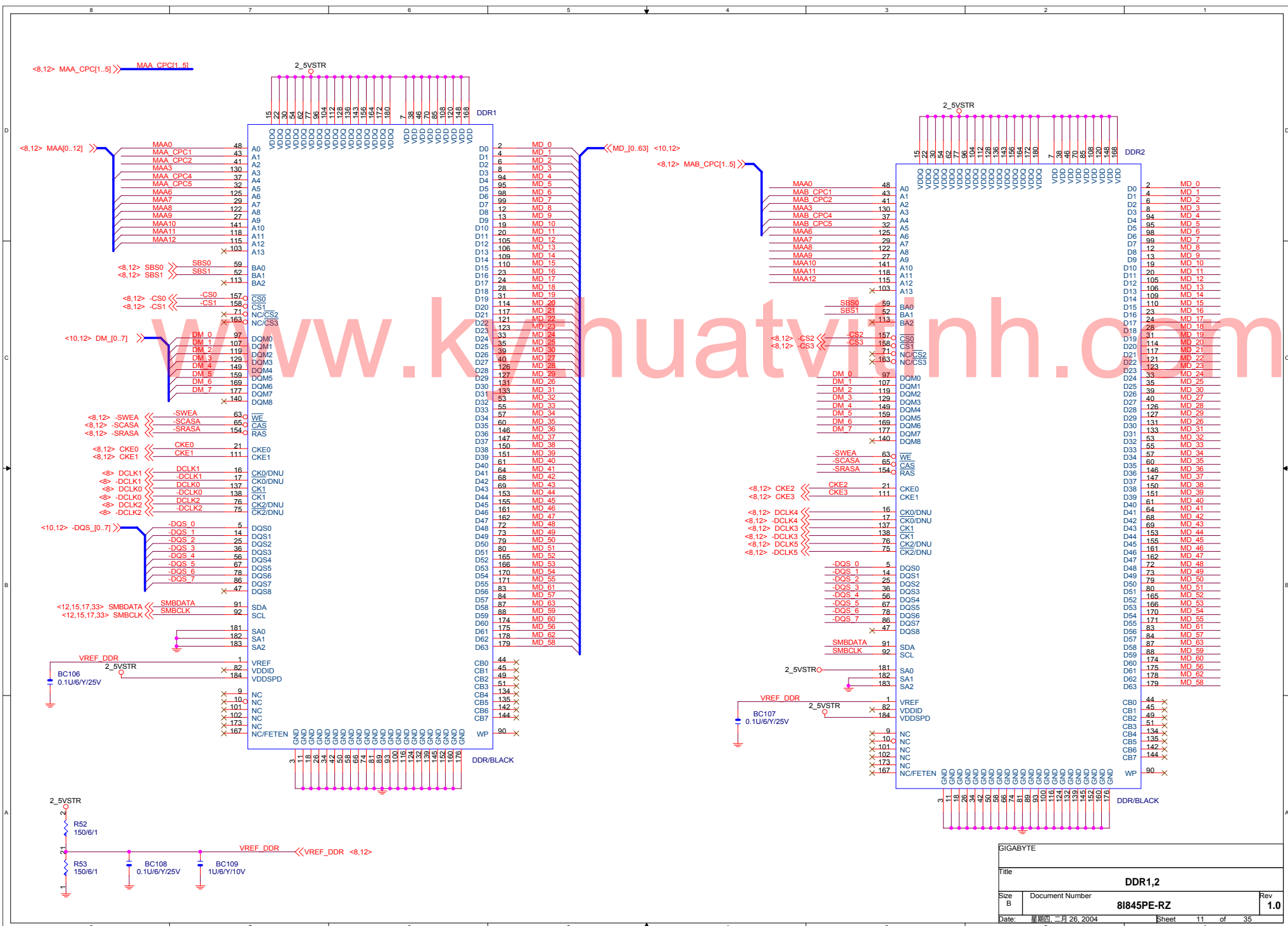
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MD 16		3	4	MD16
MD 17		5	6	MD17
MD 21		7	8	MD21
MD 42	RN4	1	2 10/8P4R	MD42
MD 46		3	4	MD46
MD 43		5	6	MD43
MD 47		7	8	MD47

MD 7	RN8	1	2 10/8P4R	MD7
MD 3		3	4	MD3
MD 8		5	6	MD8
MD 9		7	8	MD9
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MD 23		3	4	MD23
MD 24		5	6	MD24
MD 28		7	8	MD28

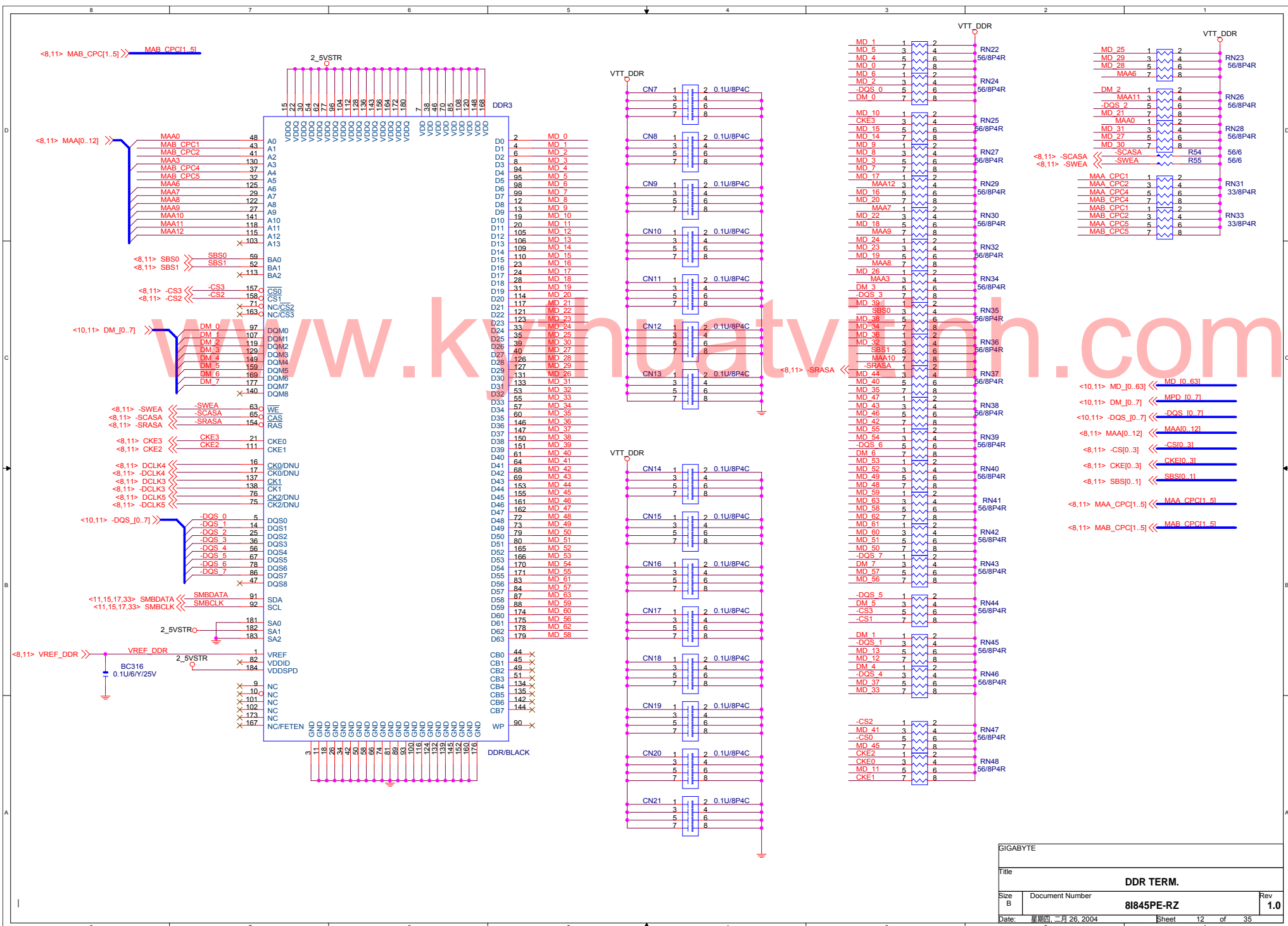
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SIGABYTE			
Title			
DDR SERIAL TERM.			
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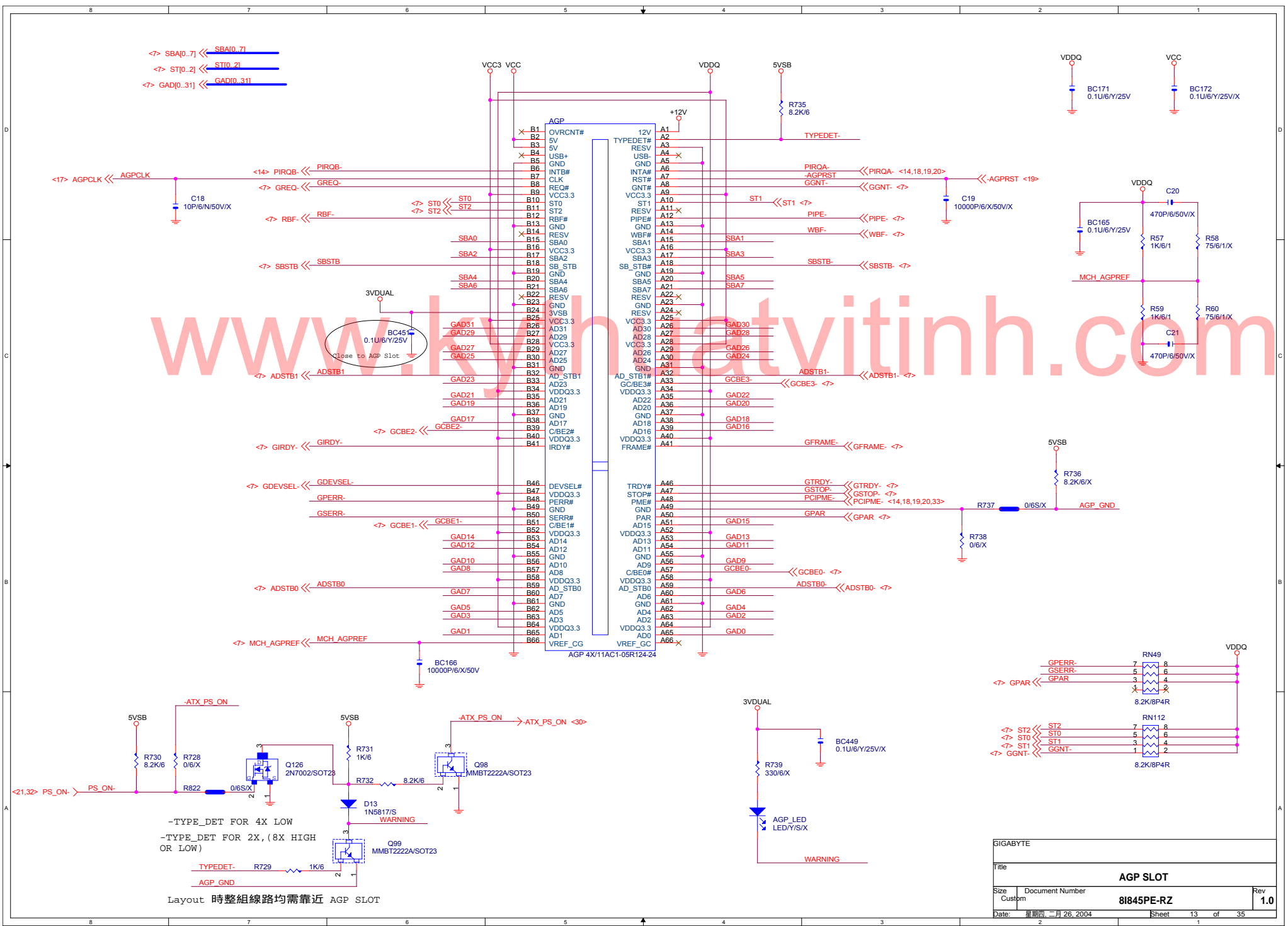


SIGNAL BYTE		
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DDR1,2		
Size B	Document Number	Rev
	81845PE-RZ	1.0
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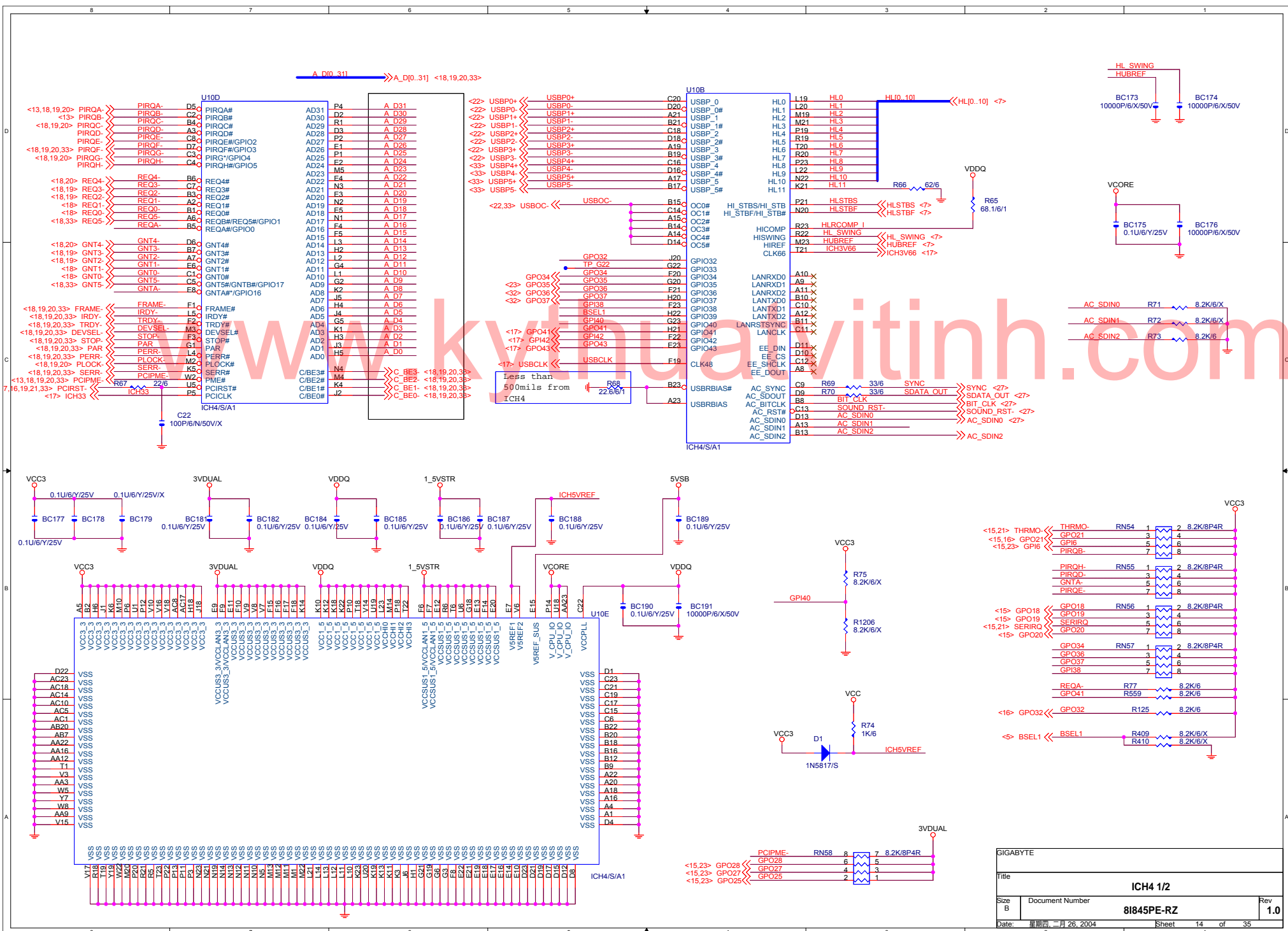
SIGABYTE		
Title		
DDR TERM.		
Size	Document Number	Rev
B	8I845PE-RZ	1.0
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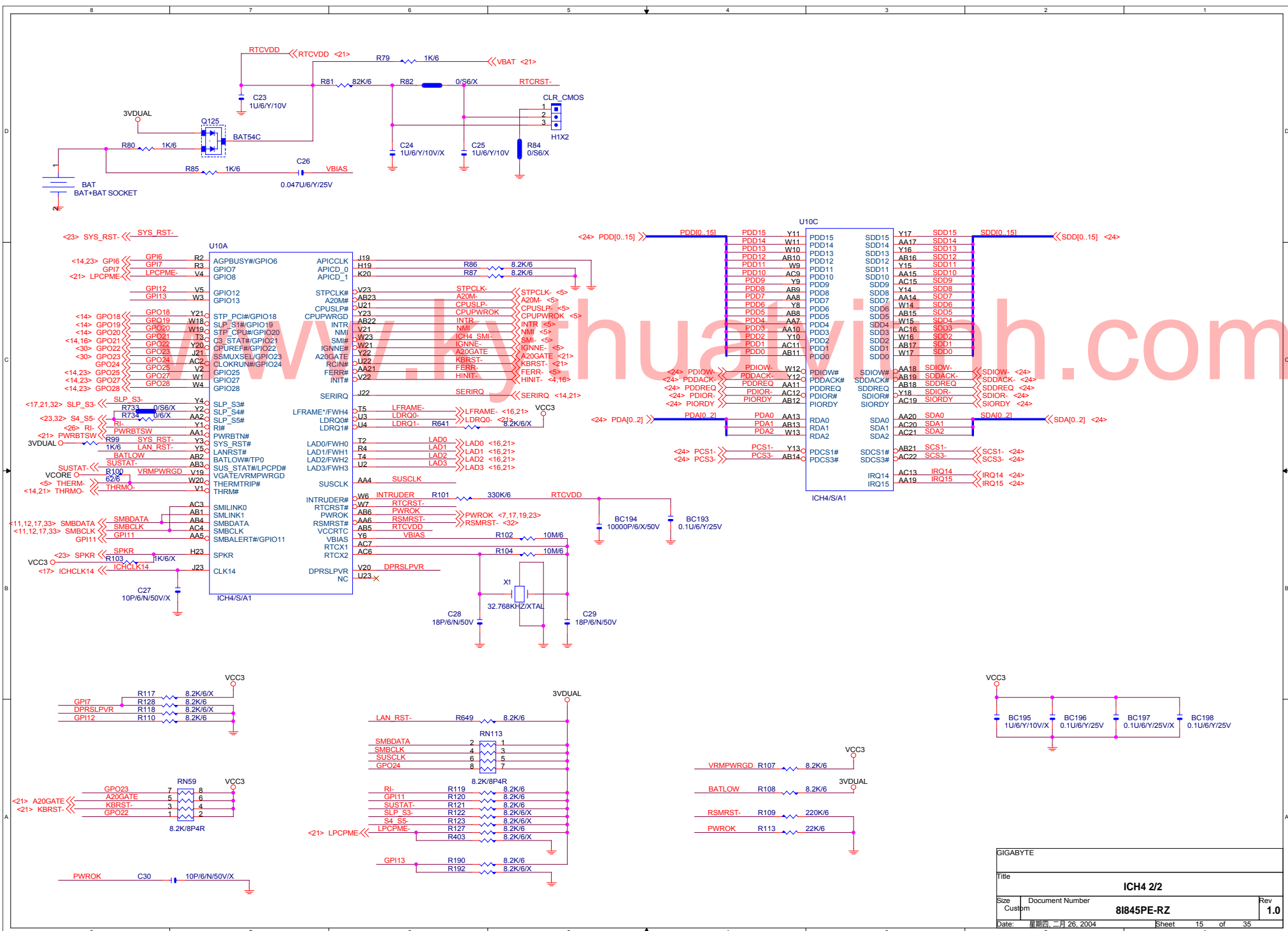


Layout 時整組線路均需靠近 AGP SLOT

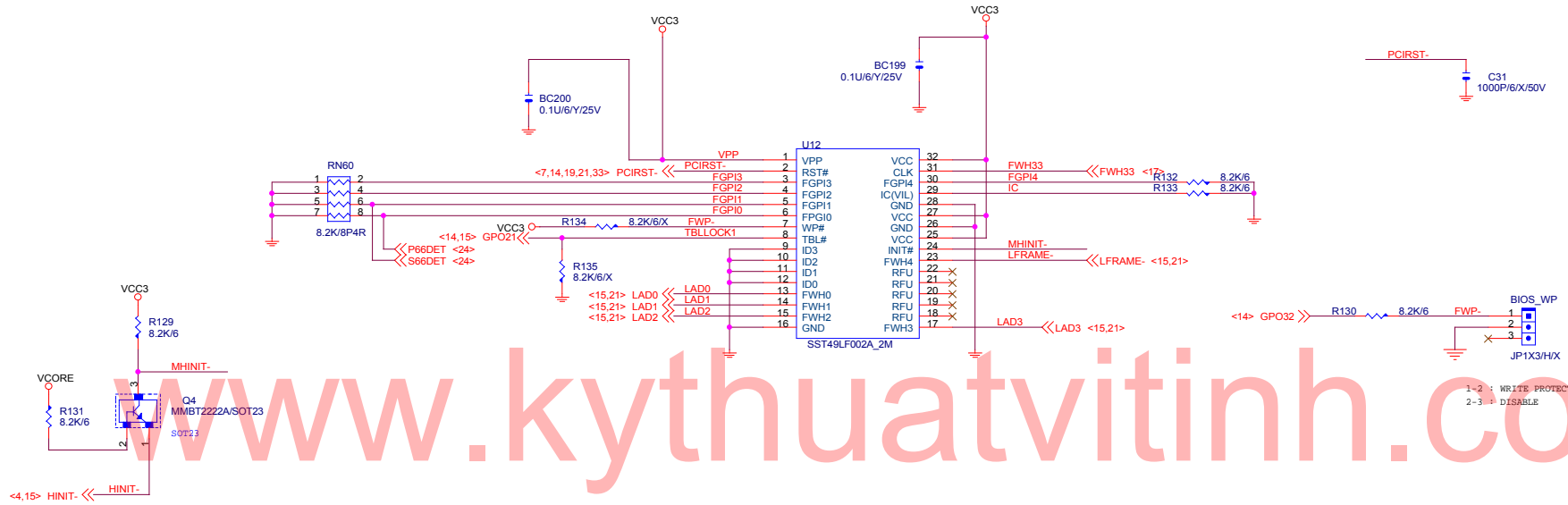
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AGP SLOT			
Size	Document Number	Rev	
Custom	81845PE-RZ	1.0	
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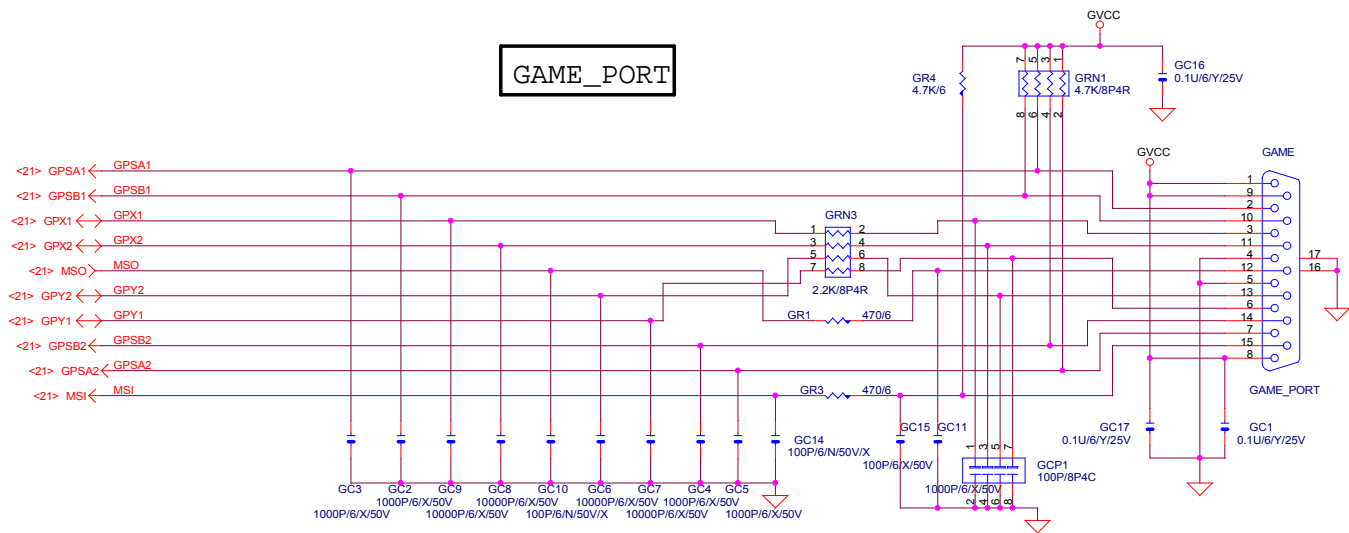
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ICH4 1/2		
Size	Document Number	Rev
B	81845PE-RZ	1.0
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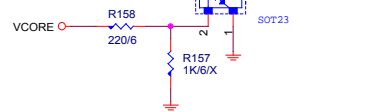
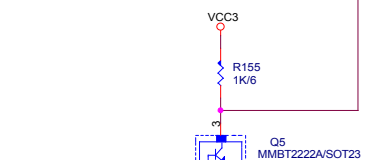
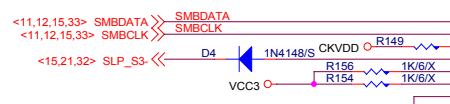
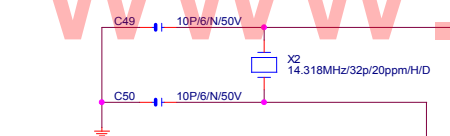
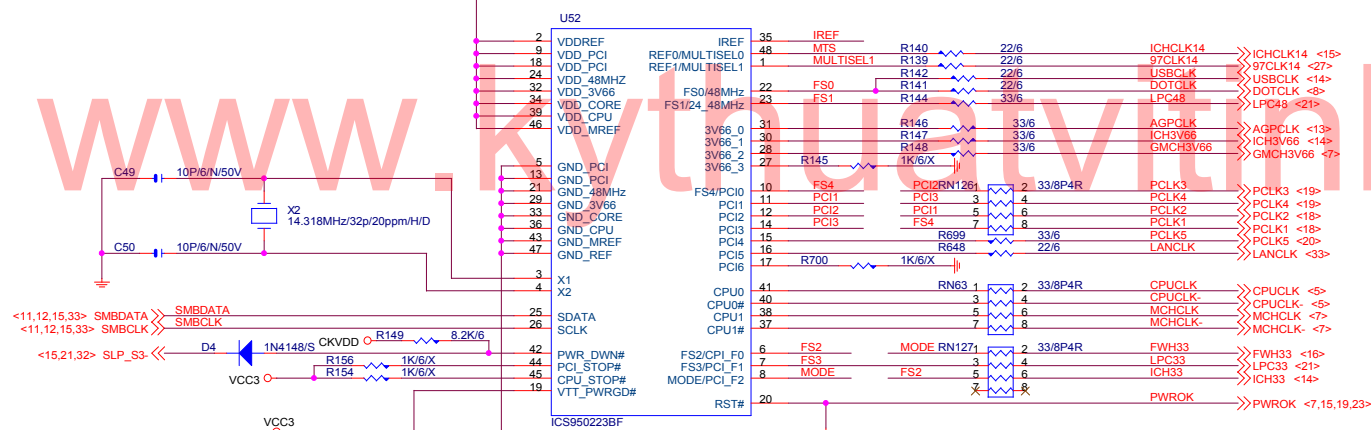
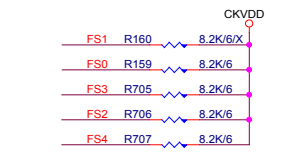
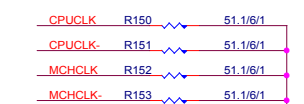
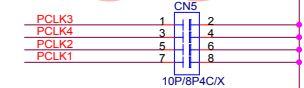
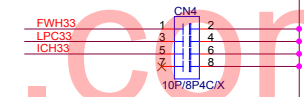
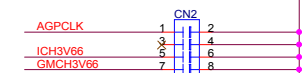
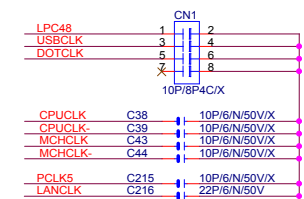
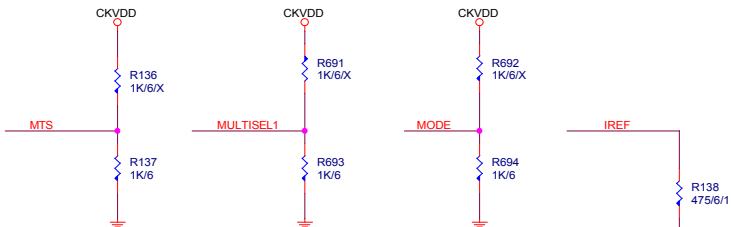
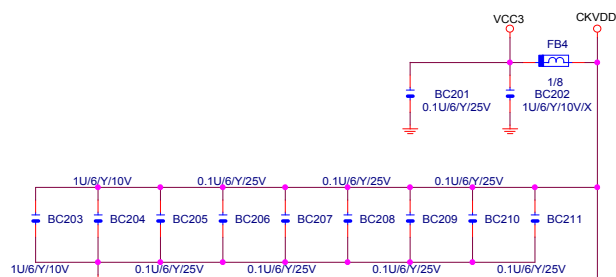
GIGABYTE		
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ICH4 2/2		
Size	Document Number	Rev
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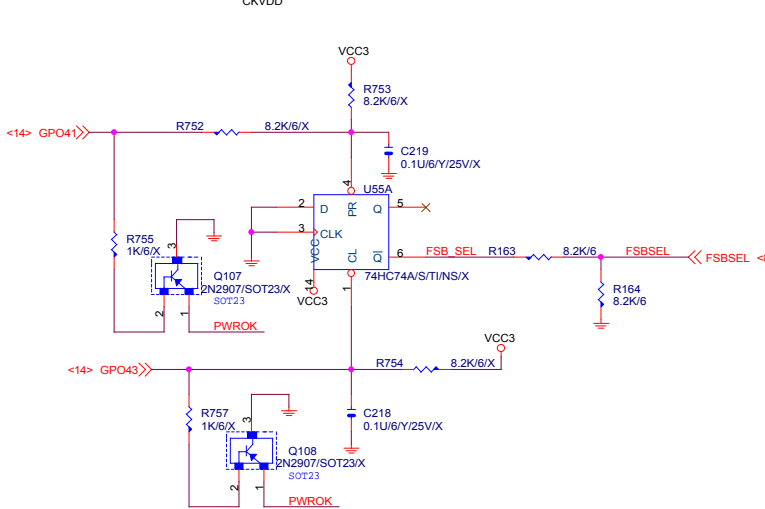
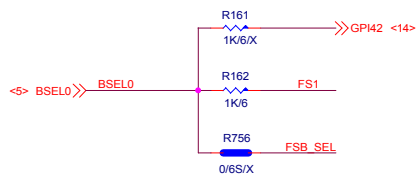
GAME_PORT



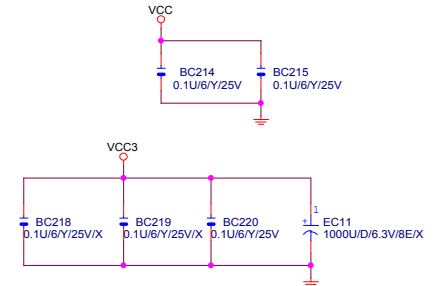
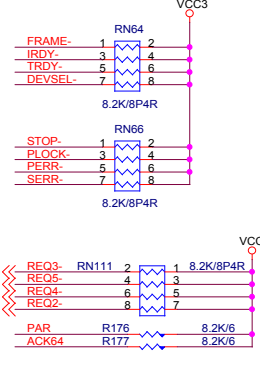
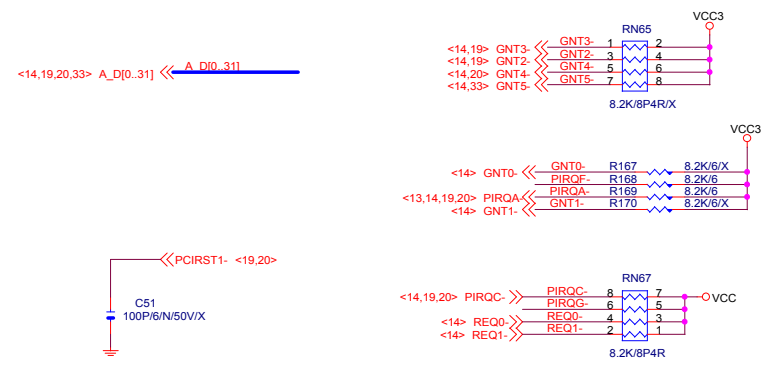
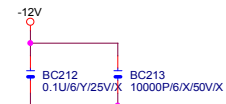
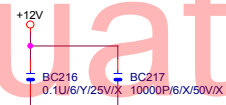
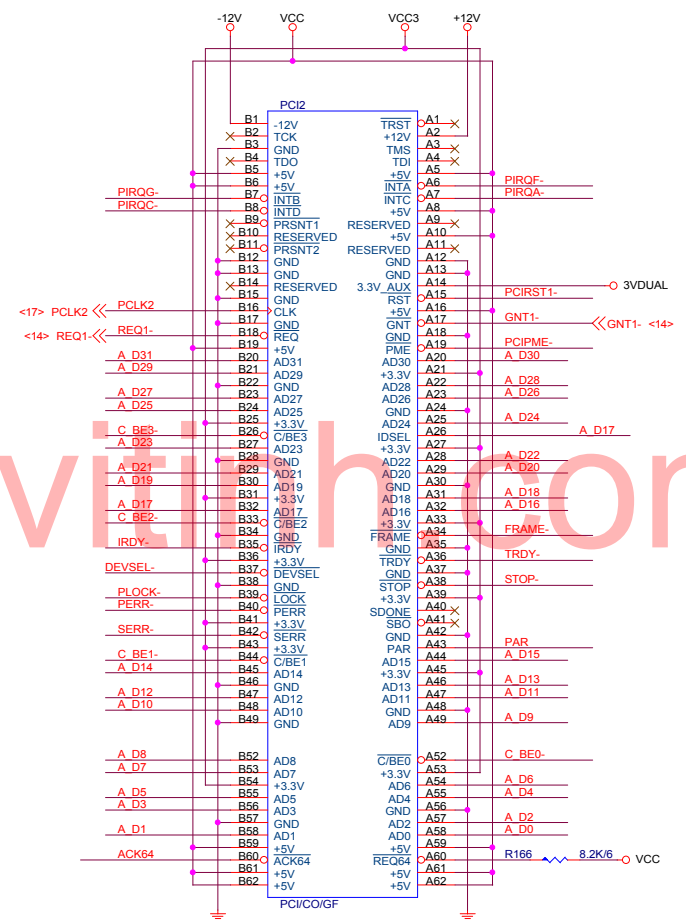
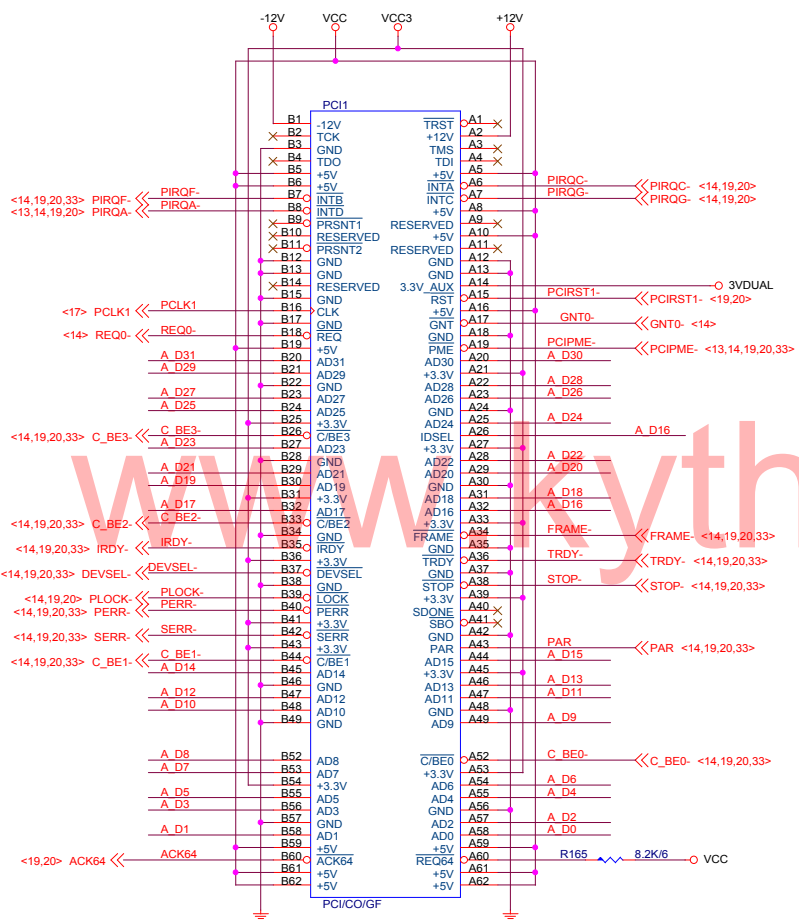
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FWH(DUAL BIOS)		
Size B	Document Number	Rev
	8I845PE-RZ	1.0
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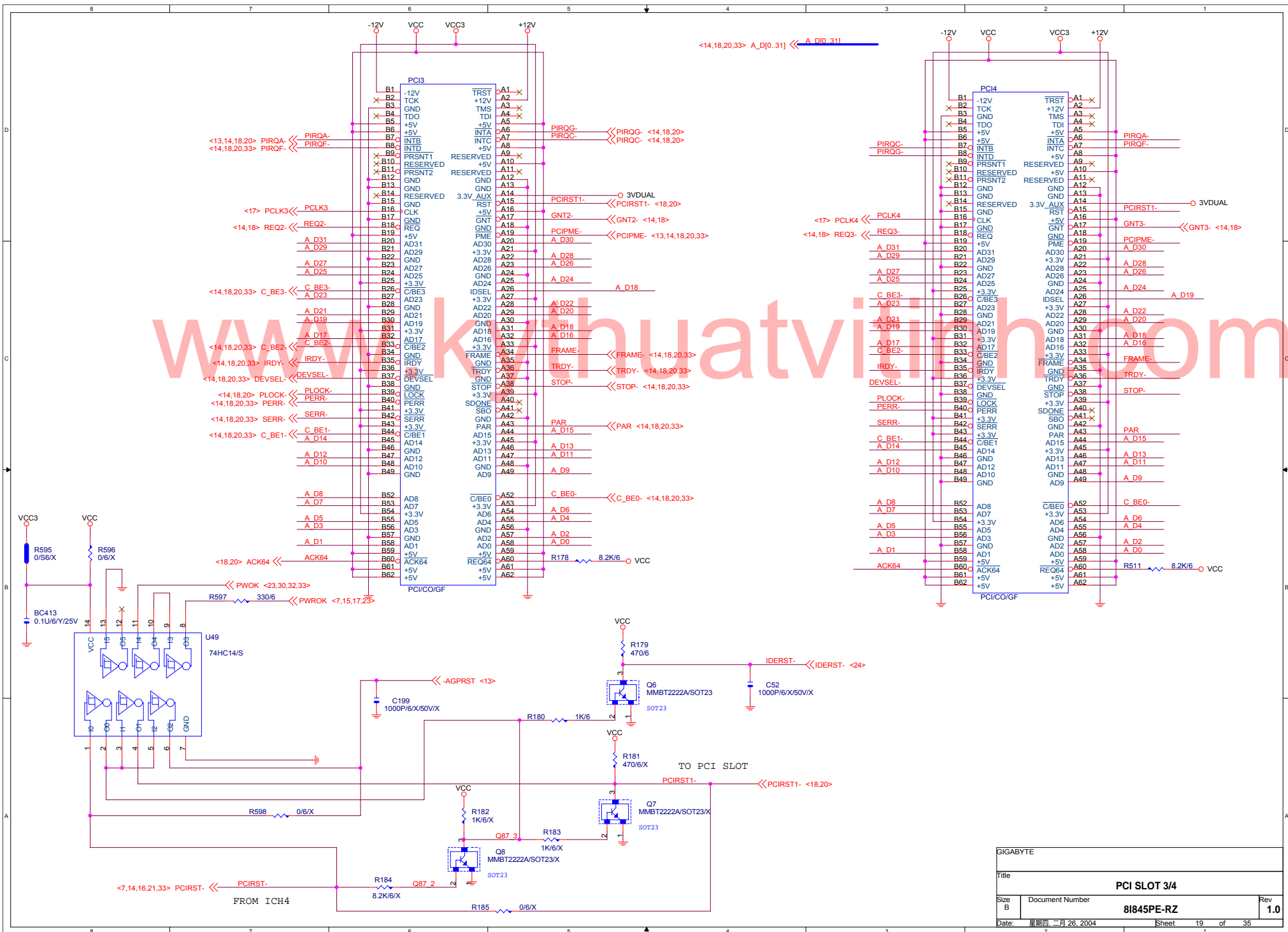
BSEL0 Pull-up at another page.



SIGABYTE			
Title			
CLOCK GENERATOR			
Size	Document Number	81845PE-RZ	Rev
Custom			1.0
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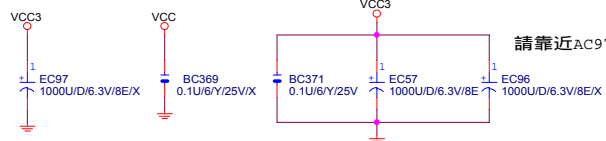
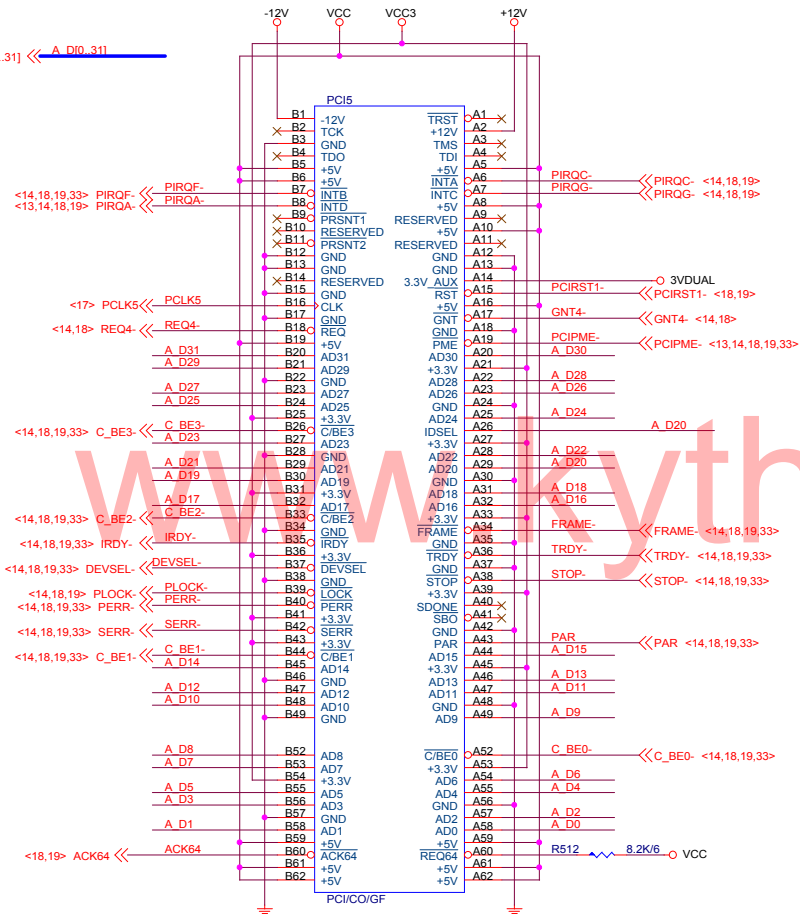


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Size B	Document Number	Rev
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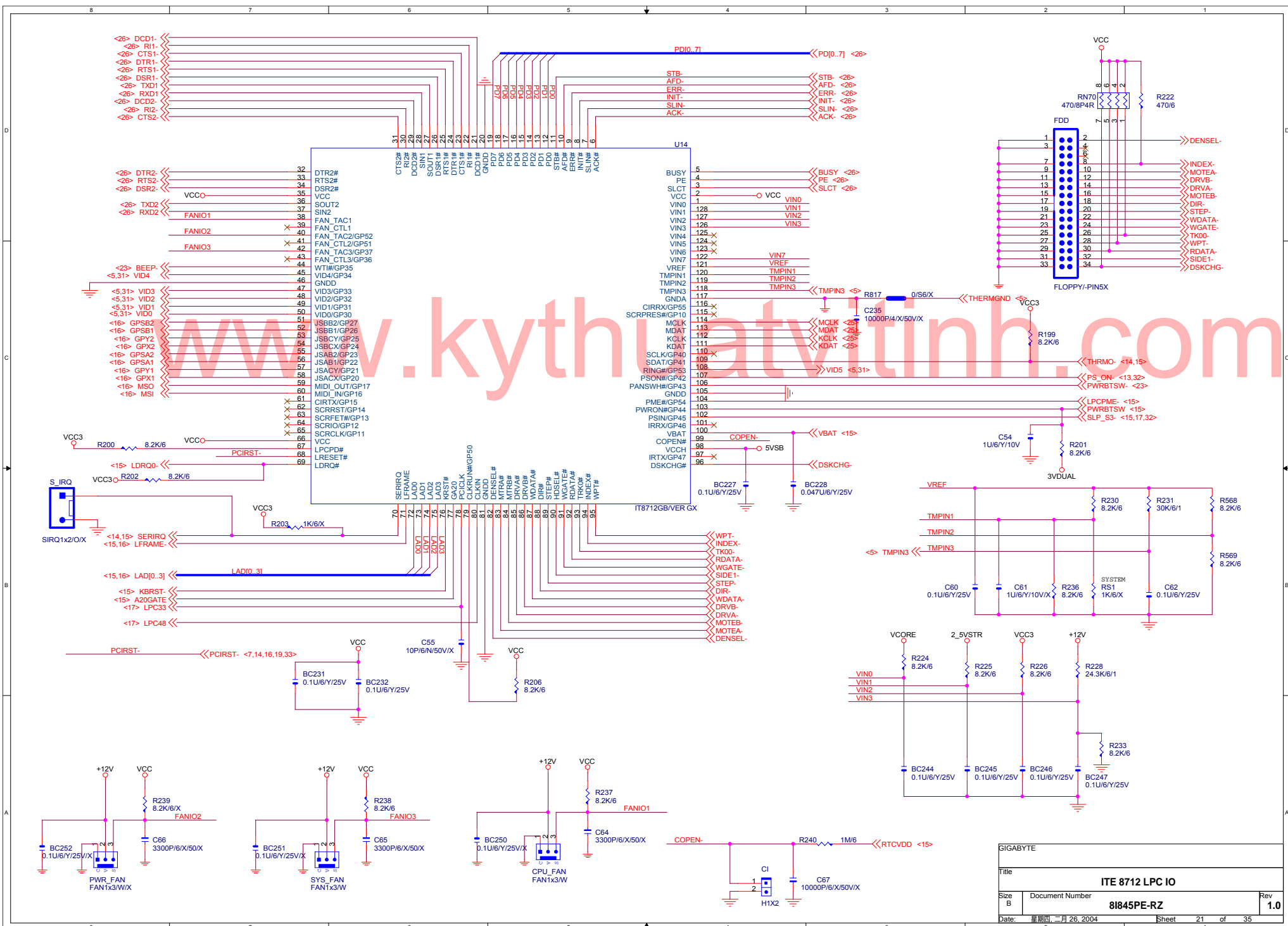
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Size	Document Number	Rev
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<14,18,19,33> A_D[0..31] << A_D[0..31]



請靠近AC97使用端

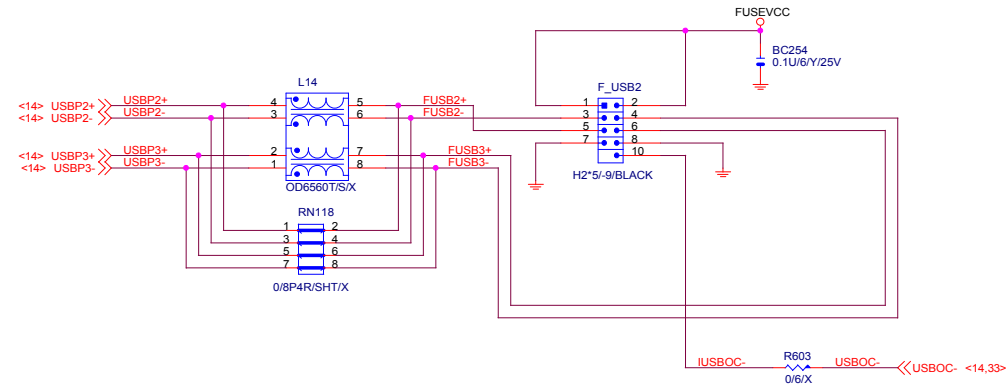
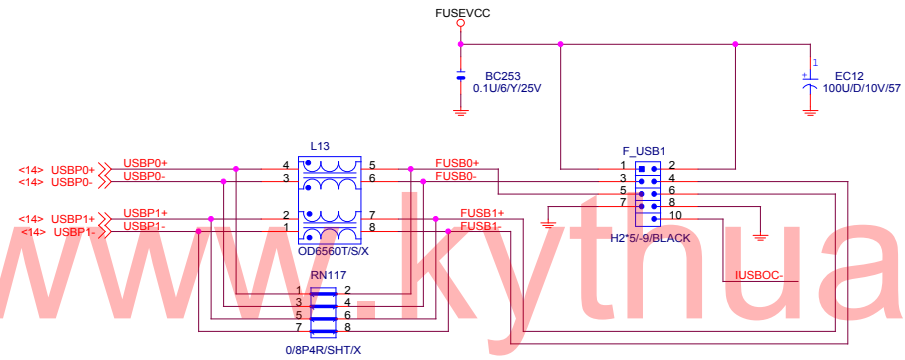
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Size B	Document Number	Rev
	8I845PE-RZ	1.0
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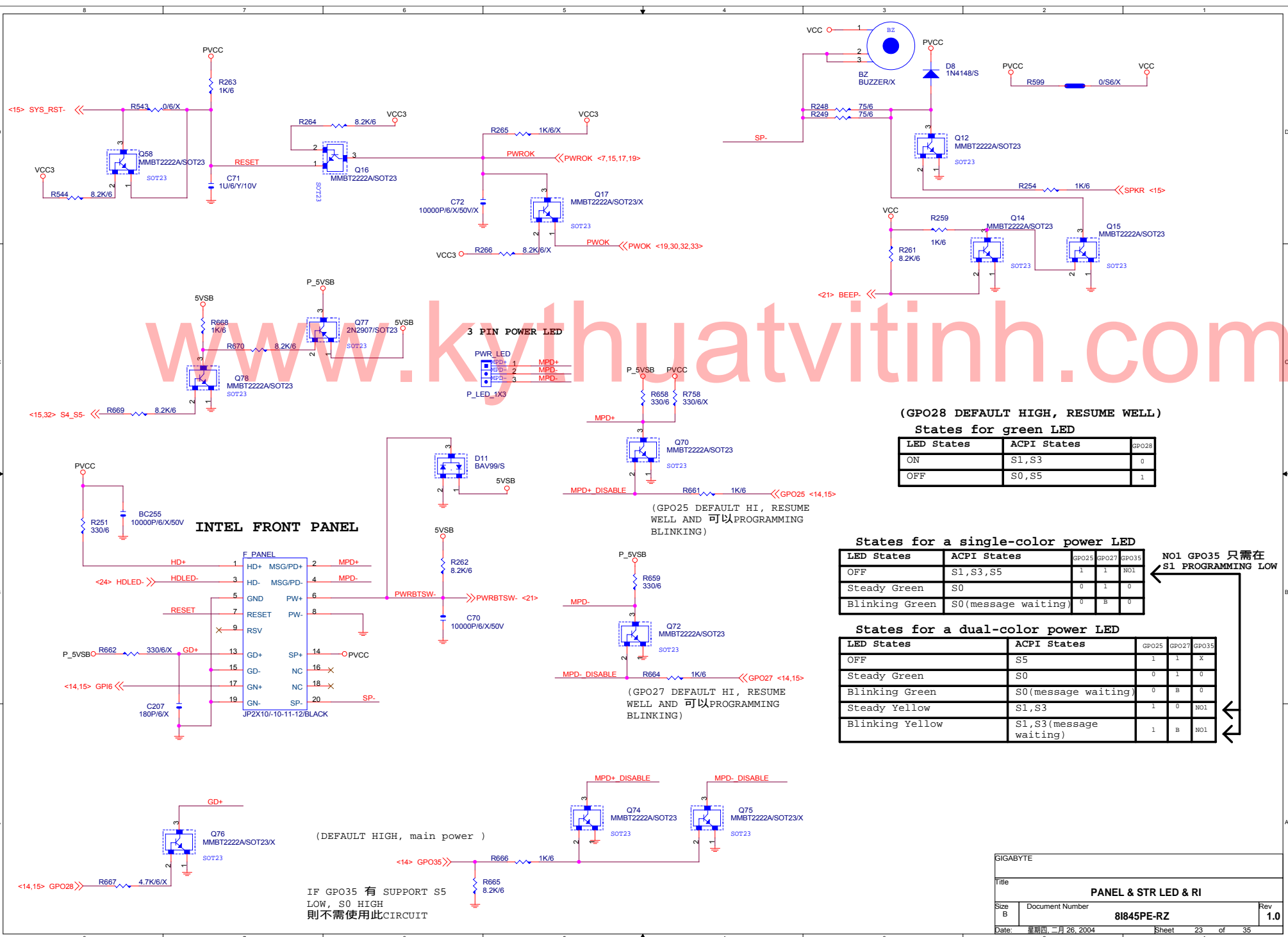
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SIGABYTE		
Title		
ITE 8712 LPC IO		
Size B	Document Number	Rev
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ICH4 USB2.0



GIGABYTE		
Title		
ICH USB+LAN PORT		
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(GPO28 DEFAULT HIGH, RESUME WELL)

States for green LED

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

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

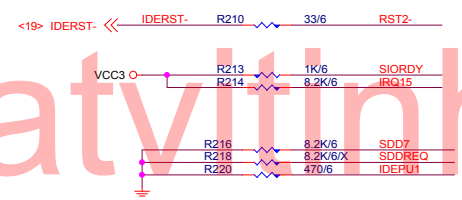
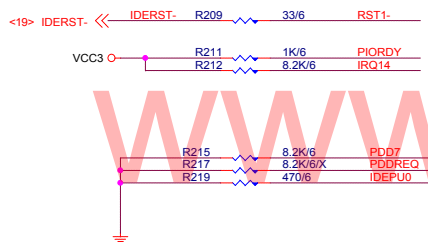
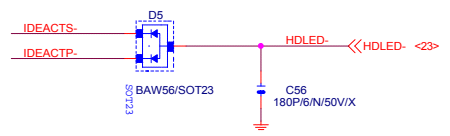
NO1 GPO35 只需在 S1 PROGRAMMING LOW

States for a dual-color power LED

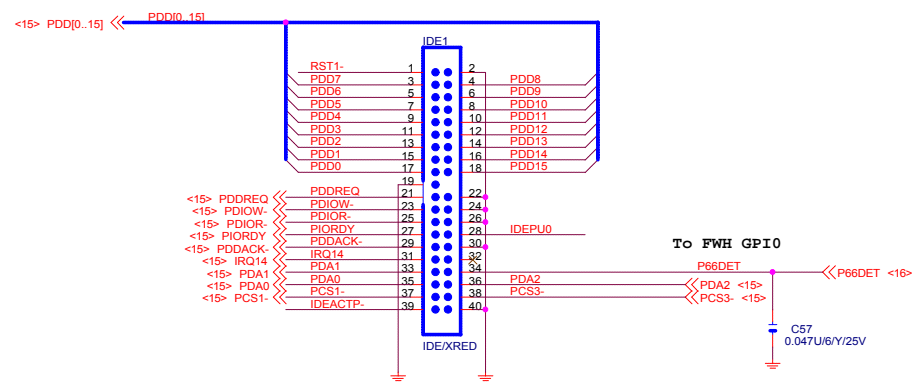
LED States	ACPI States	GPO25	GPO27	GPO35
OFF	S5	1	1	X
Steady Green	S0	0	1	0
Blinking Green	S0(message waiting)	0	B	0
Steady Yellow	S1,S3	1	0	NO1
Blinking Yellow	S1,S3(message waiting)	1	B	NO1

(DEFAULT HIGH, main power)

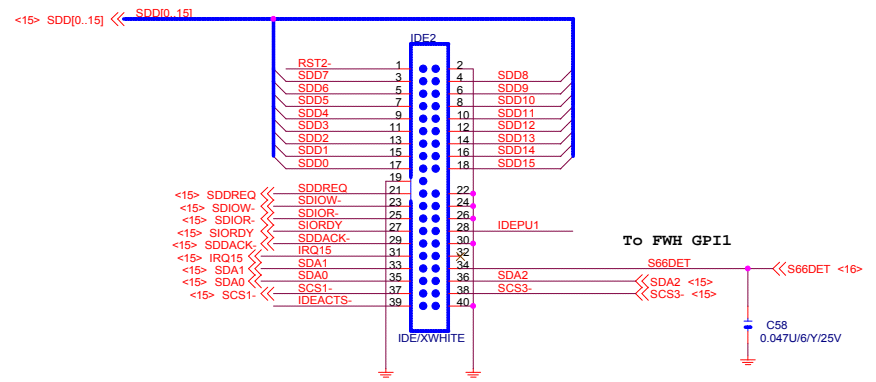
IF GPO35 有 SUPPORT S5 LOW, S0 HIGH 則不需使用此CIRCUIT



PRIMARY IDE CONNECTOR

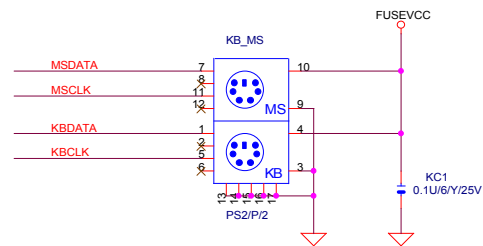
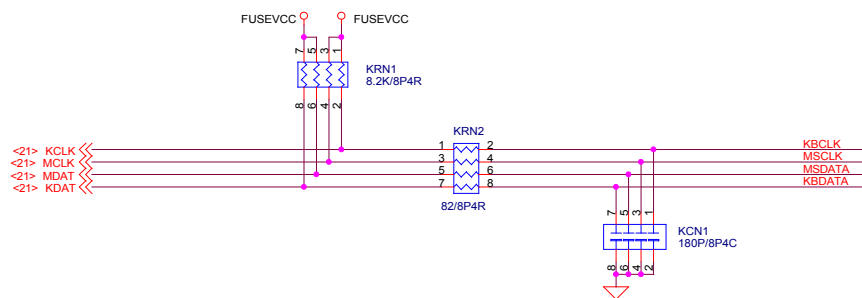
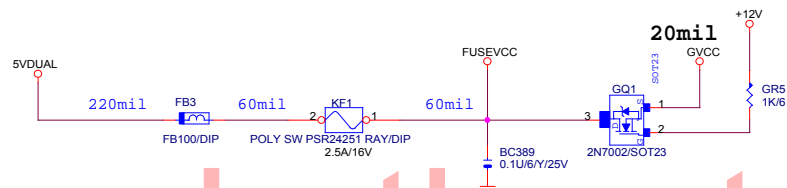


SECONDARY IDE CONNECTOR



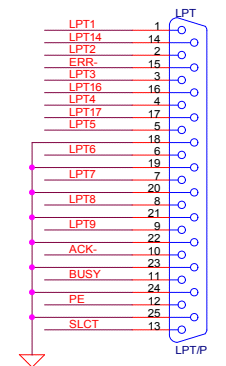
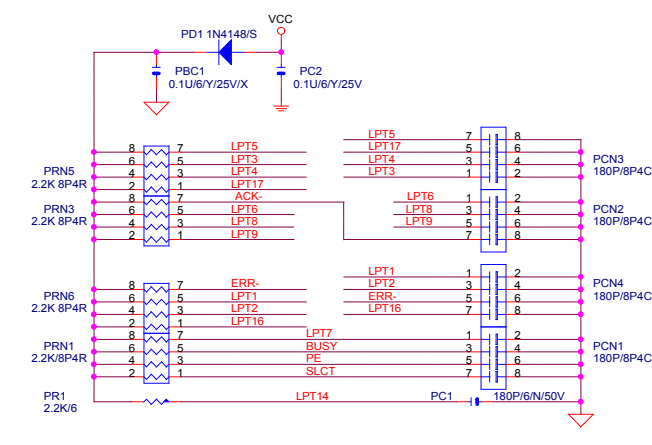
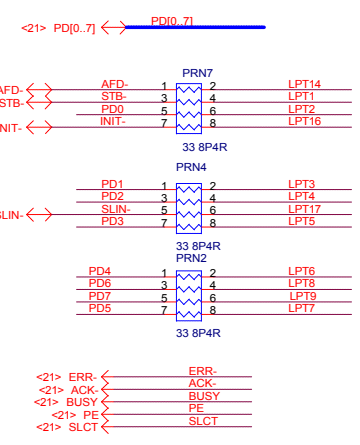
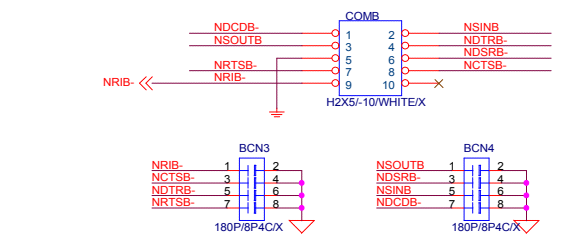
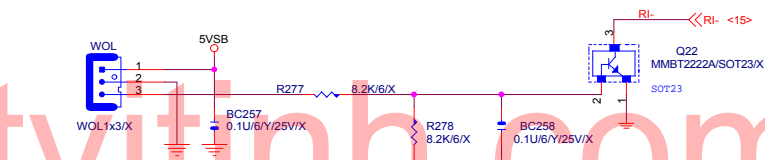
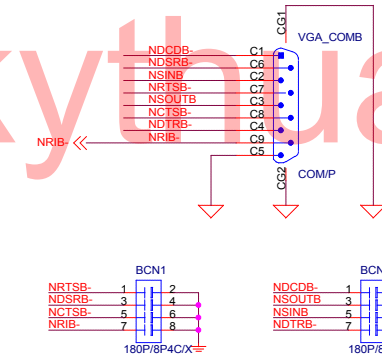
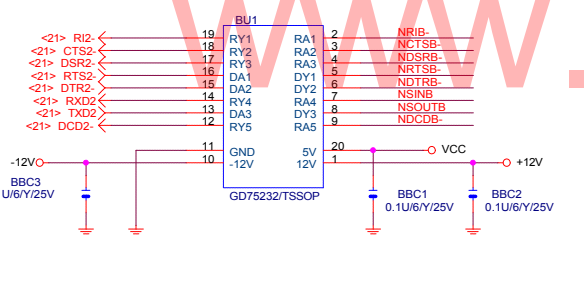
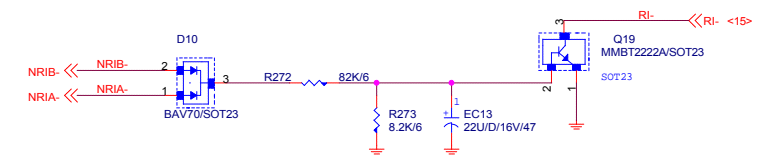
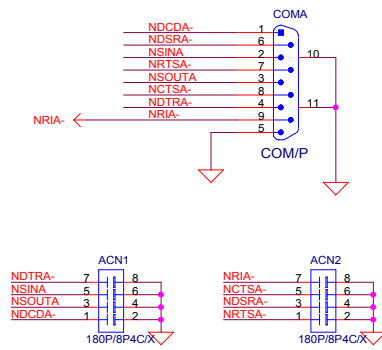
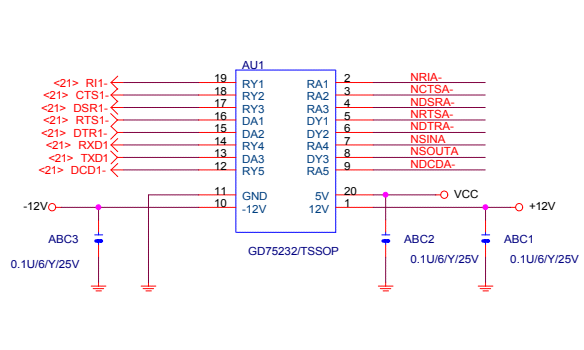
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Title		
IDE CONNECTOR		
Size B	Document Number	Rev
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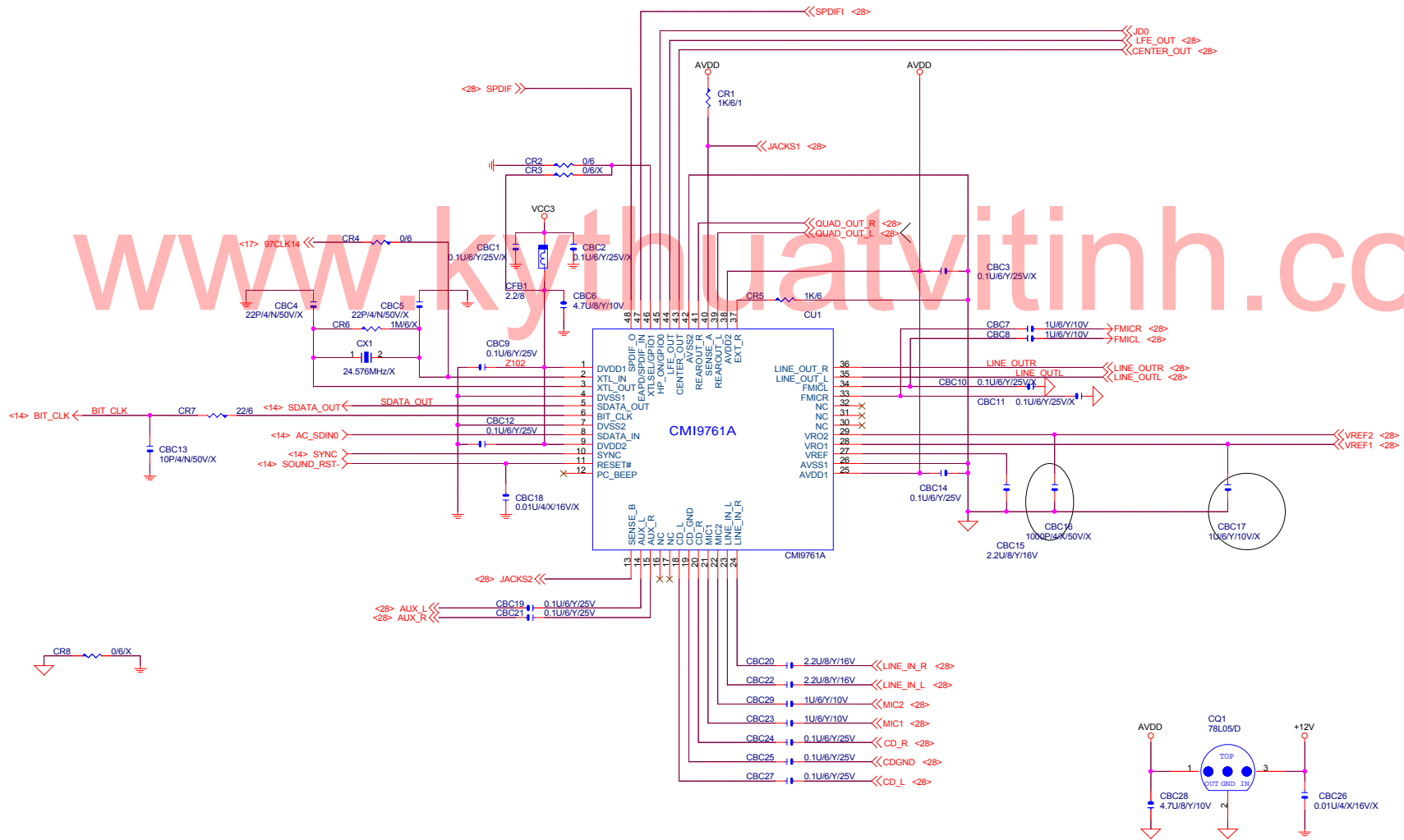
模組化線路

GIGABYTE CORP.		
Title KB & PS2 MOUSE & IR		
Size B	Document Number 8I845PE-RZ	Rev 1.0
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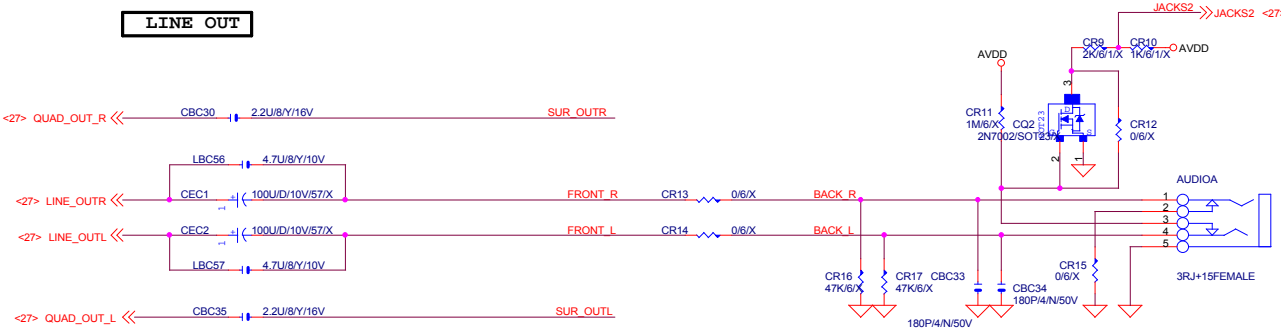
模組化線路

GIGABYTE CORP.		
Title		
COM & IR & LPT PORT & FLOOPY		
Size	Document Number	Rev
B	8I845PE-RZ	1.0
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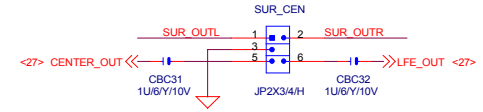


SIGABYTE			
Title			
C-MEDIA 9761A			
Size	Document Number	Rev	
Custom	8I845PE-RZ	1.0	
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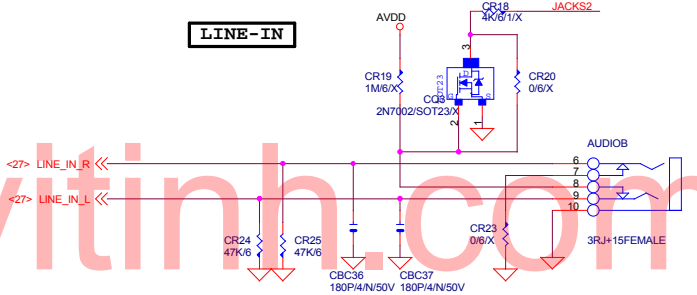
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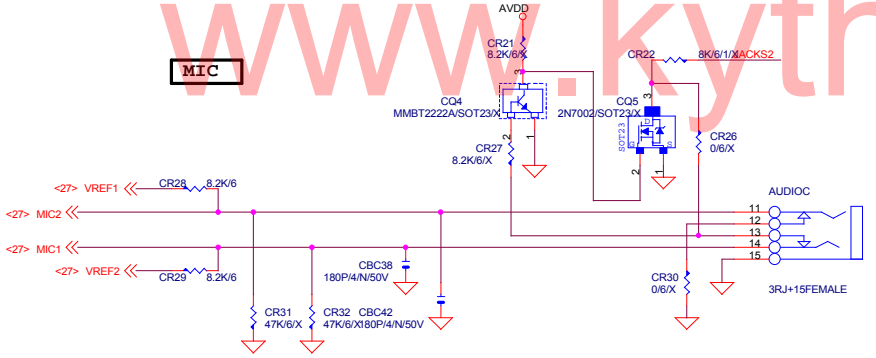
SUR_CEN



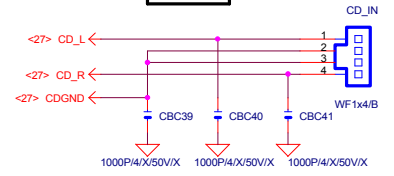
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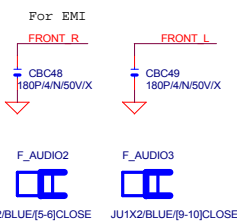
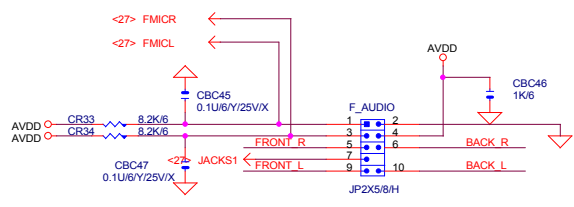
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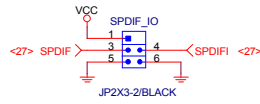
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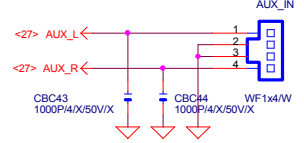
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SPDIF

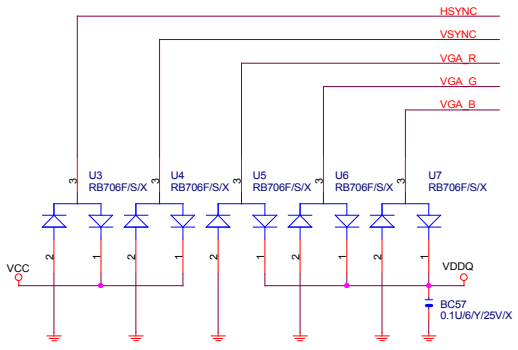
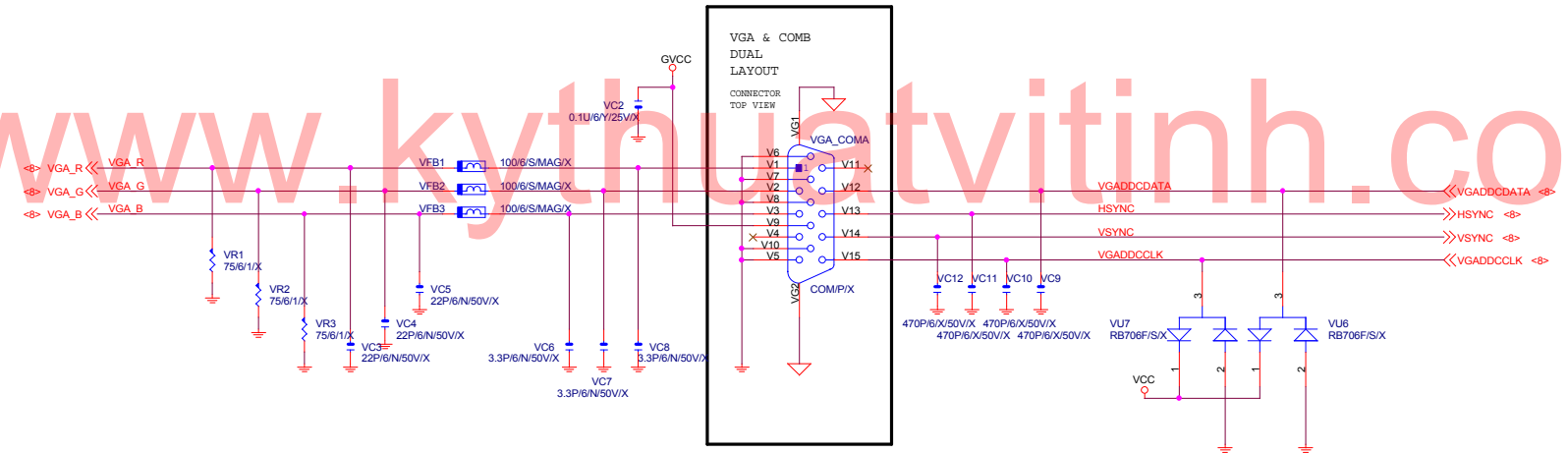


AUX IN DEFAULT NO POP



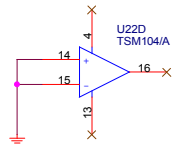
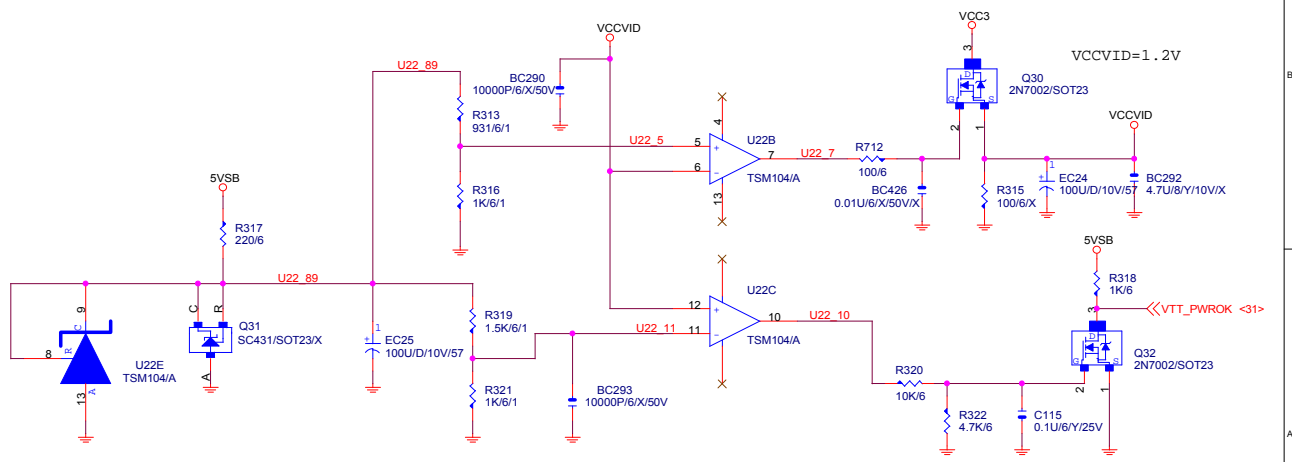
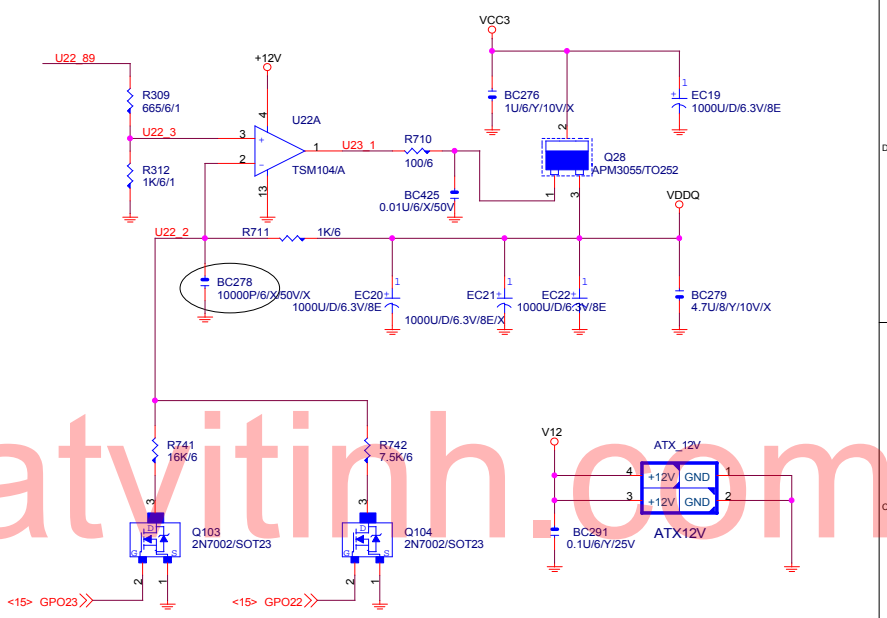
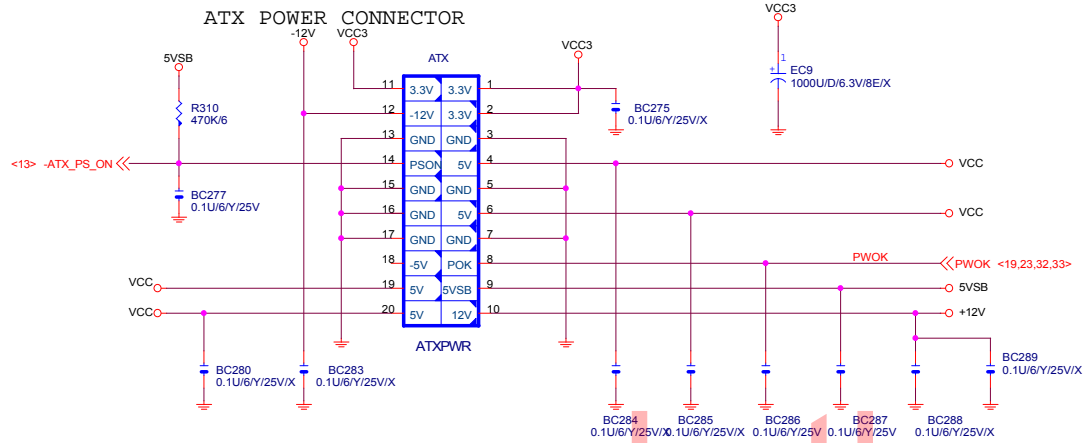
GIGABYTE		
AUDIO OUTPUT, GAME PORT		
Title		
Size	Document Number	Rev
Custom	81845PE-RZ	1.0
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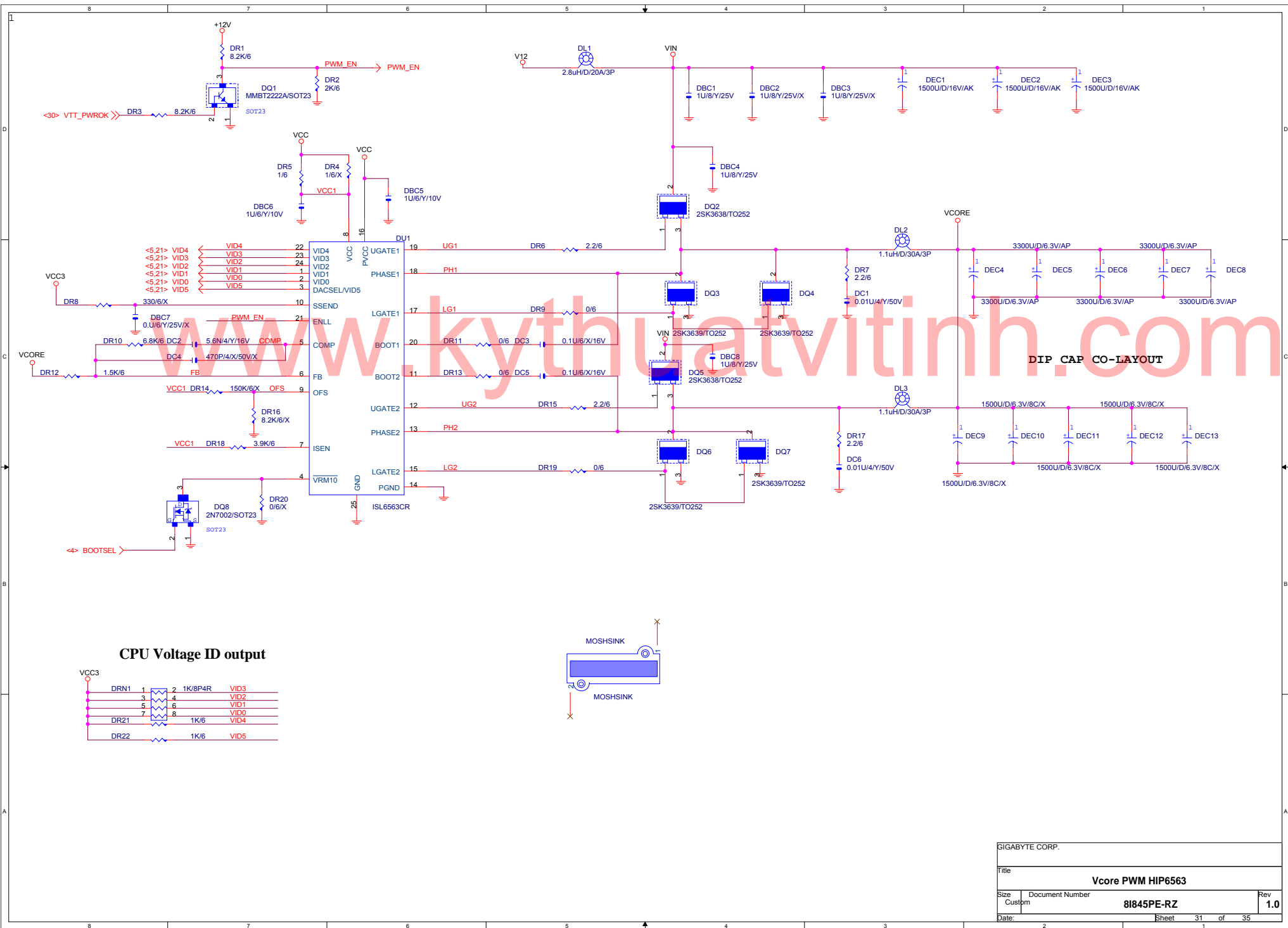
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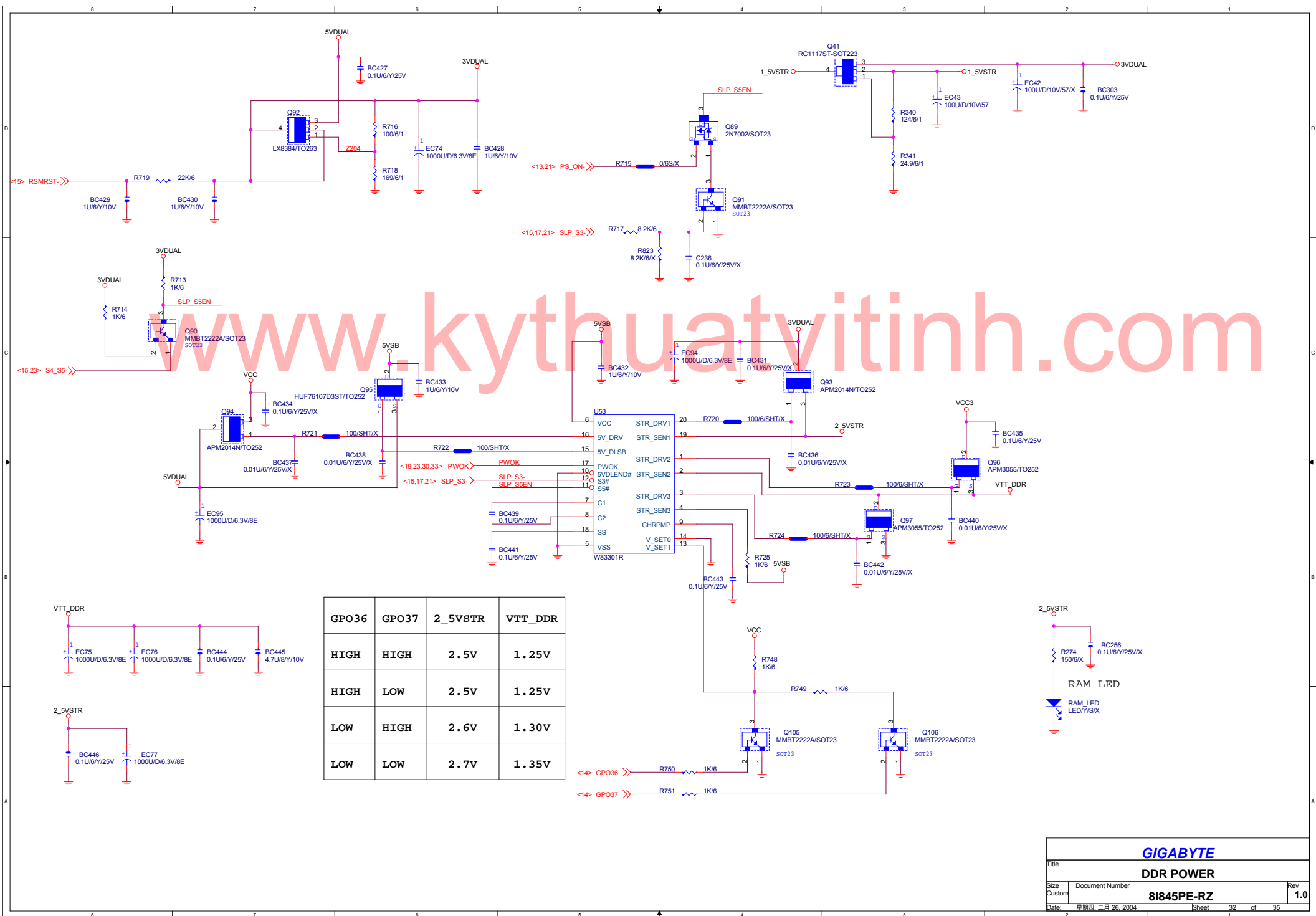
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Size	Document Number	Rev			
Custom	8I845PE-RZ	1.0			
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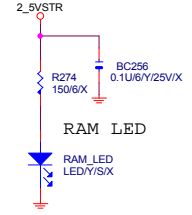
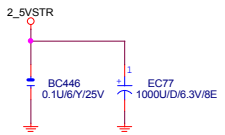
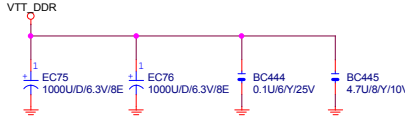
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SIGABYTE		
Title		
Misc. PWR & ATX CONN.		
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GPO36	GPO37	2_5VSTR	VTT_DDR
HIGH	HIGH	2.5V	1.25V
HIGH	LOW	2.5V	1.25V
LOW	HIGH	2.6V	1.30V
LOW	LOW	2.7V	1.35V



	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

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

LR1: 100M:RTL8100C
1G:RTL8110S

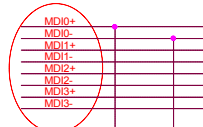
LR15: 100M:5.9K/6/1
1G:2.49K/6/1

MDI0+
MDI0-
AVDDL 3
MDI1+
MDI1-
AVDDL 7
CTRL25 8
AVDDH 10
V_12P 12
MDI2+
MDI2-
AVDDL 16
MDI3+
MDI3-
AVDDL 20
GND 21
ISOLATE 23
PIROF_ DVDD 24
PIROF_ 3VDDUAL 26
PCIRST- <14,18,19,20> 27
LANCLK <17> 28
GNT5- <14,18> 29
REQ5- <14,18> 30
PCIPME- <13,14,18,19,20> 31
DVDD 32
A_D31 33
A_D30 34
GND 35
A_D29 36
A_D28 37
VSSPST 38

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

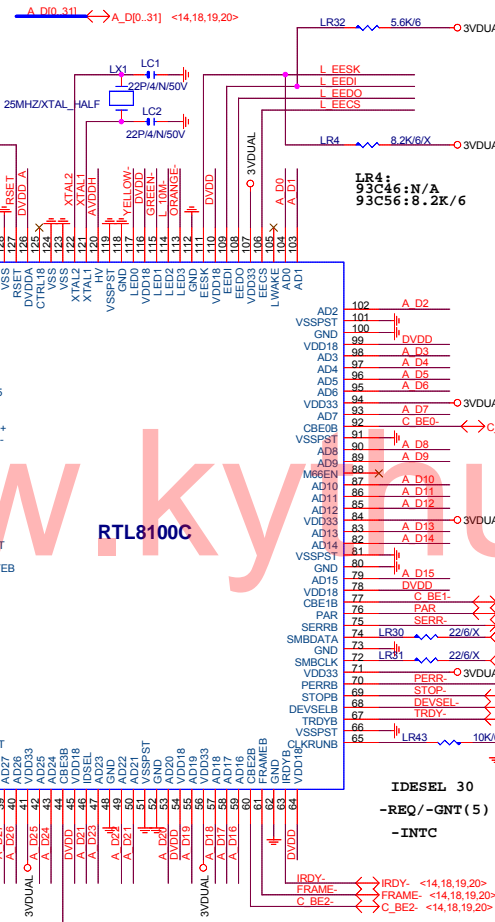
LBC28, LBC29: 100M:N/A
1G:0.01U/6

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-).



RTL8100C

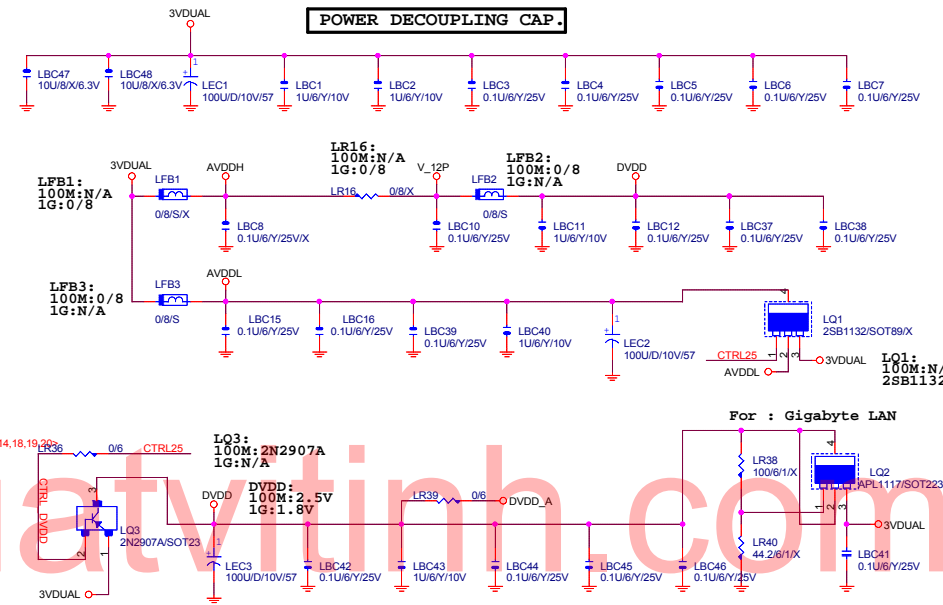
IDESEL 30
-REQ/-GNT (5)
-INTC

USBLAN[S]-TECHP35-152-1129J

FOR 1G:P35-152-19W9

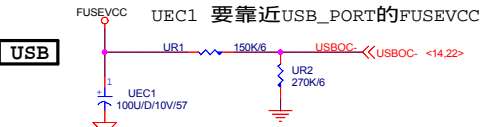
FOR 100M:P35-152-11Z9

POWER DECOUPLING CAP.

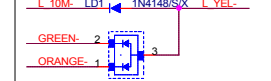
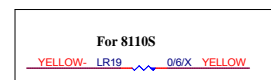
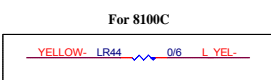
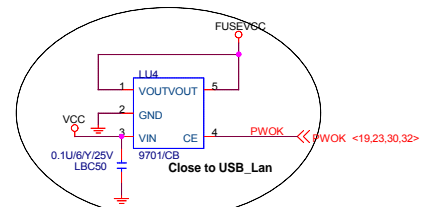
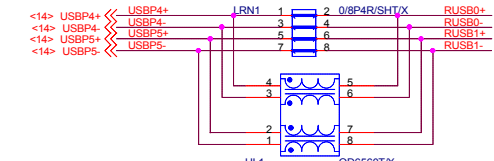
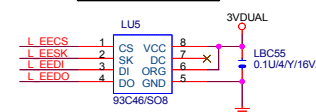


For Gigabyte LAN

USB



LAN EEPROM



Title			GIGABYTE
Document Number			LAN RTL8100C
Custom			81845PE-RZ
Date:	日期: 二月 26, 2004	Sheet	33 of 35
Rev			1.0

GIGABYTE GA-8PE667 PCI ROUNTING LIST *Revision : 0.1*

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-

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GIGABYTE GA-8PE800 GPIO LIST

Revision 2.0

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.