

BLOCK DIAGRAM

INTEL Pentium4 LGA775

VCORE = 1.75V / SLEEP: 1.3V
VCC3

PAGE 4, 5, 6, 7

CLOCK GENERATOR

CKVDD = 3.3V

PAGE 22

PWM/OTHER POWER

VCORE = 1.75V (650-1100MHZ) / SLEEP: 1.3V
5VSB = 12V / 12V, VCC, VCC3, 3VDDUAL
VTT_DDR2 = 2.5VSTR

PAGE 8, 34, 35

GMCH GRANTS DALE

VCORE = 1.75V / SLEEP: 1.3V
2.5VSTR = 2.5V(MEMORY,SUSPEND POWER)
VDDQ = 1.5V (AGP POWER 4X, HUBLINK)

PAGE 9, 10, 11, 12, 13, 14

**CHANNEL A
DDR II DIMM X 1**

2.5VSTR = 2.5V(MEMORY,SUSPEND POWER)
VTT_DDR = 1.25V

PAGE 15, 17

**CHANNEL B
DDR II DIMM X 1**

2.5VSTR = 2.5V(MEMORY,SUSPEND POWER)
VTT_DDR = 1.25V

PAGE 16, 17

**PCI EXPRESS
BY 16 PORTS**

VDDQ = 1.5V (AGP POWER 4X)
VCC3 = 3.3V
+12V = 12V
3VDDUAL = 3.3V
VCC = 5V

PAGE 18

GAD0-31
ADSTB0, ADSTB0-
ADSTB1, ADSTB1-
SBA0-7
SBSTB, SBSTB-
GCBE0-3-
ST0-2

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

HLO-10
CONTROL BUS HUB LINK

ICH6

VCC2S = 2.5V(I/O, MEMORY, VLINK)
3VDDUAL = 3.3V(SUSPEND POWER)
VCC3 = 3.3V
RTVDD = 3.3V

PAGE 19, 20, 21

IDE Primary

VCC = 5V

PAGE 29

SERIAL ATA

VCC = 5V

PAGE 20

USB PORTS 0~7

VCC = 5V
5VSB = 5V
5VSSB = 5V

PAGE 29

AZALIA
LINK

PCI BUS

LPC BUS

AC97/ALC655

+12V = 12V
VCC3 = 3.3V
VCC = 5V
AVDD = 5V

PAGE 30

**PCI SLOT
PCI EXPRESS SLOT**

+12 = 12V
-12 = -12V
VCC = 5V
VCC3 = 3.3V
3VDDUAL = 3V

PAGE 23, 24

FWH/HWMO

VCC = 5V
VCC3 = 3V

PAGE 26

AUDIO PORTS : FRONT AUDIO

LIN_ OUT LINE_IN MIC
TELE CD_IN AUX_IN

PAGE 31

**LAN REALTEK
RTL8110S**

PAGE 32, 33

LPC ITE8712IX

VCC = 5V
5VSB = 5V
VBAT = 3V

PAGE 25

FRONT PANEL/BZ

VCC = 5V
5VSB = 5V
+12 = 12V
PVCC = 5V

PAGE 37

I/O PORTS :

COMA COMB LPT PS2 IR FDD

PAGE 27, 28, 29

GIGABYTE			
BOM & PCB MODIFY HISTORY			
File			
Size	Document Number	81915MD-G	Rev
Customer			1.0
Date	Thursday, August 18, 2005	Sheet	2 of 35

Model Name: 8I915MD-G

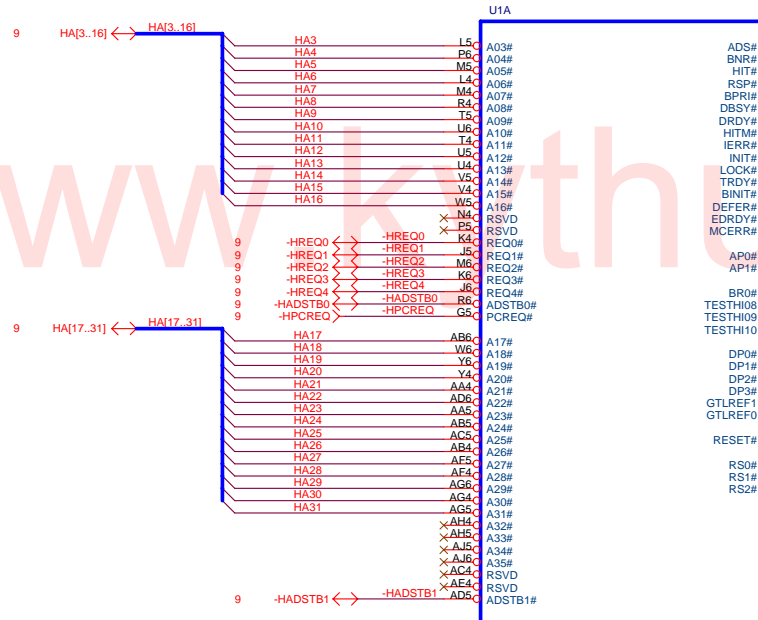
Circuit or PCB layout change for next version

Component value change history

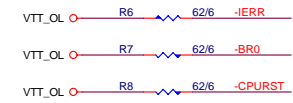
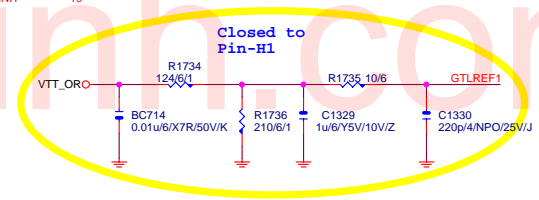
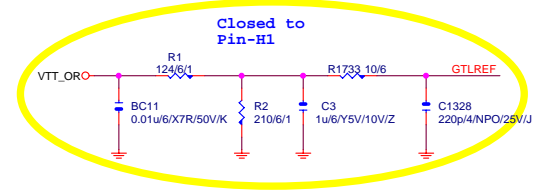
2004/11/22

Data	Change Item	Reason
2005/07/01	First Release	
2005/08/10	0.1A==>1.0A	
	1.DR82 for PWM MOSFET溫度平衡	
	2.C61 for On-Board VGA水波紋	
	3.R1161,R1162,R1244,R1166 for Clock調整	
	4.CPU FAN change to 4PIN	
	5.R1721 for DDR18V overvoltage	
	6.R565,R563 for PROCHOT調整	
	7.C40,C41,C42,C1332,LR40,BC101, BC127,FB5,FB6,BC702 for EMI solution	
2005/08/15	1.0A==>1.0B	
	1.Add CR9	
	2.Add Dual Core CPU Circuit(如果有改版)	
	3.PCB size change to 215.01*243.84	
	PCB change to GA-8I915MD-G	
	4.Add R1742 for D.C.	
	5.R1698 change to 22K/6	
	6.C1315 add 1u/6	

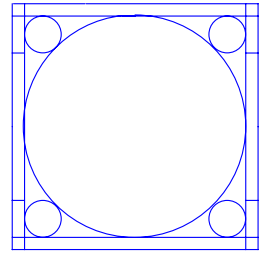
PAGE	Change Item	Reason
0.1==>1.0	1.VTT_GMCH CAP.移3顆靠近CPU side	
	2.N/B下方之GND連接起來	
	3.CPU side的Vcore&GND連接起來	
	4.CPU side把Vcore包進切割	
	5.VCC1_5切割加大	
	6.EMI solution	
	7.Clock 末端加ICT or VIA	
	8.DDR25V_DAC C61 change to 10U/8	
	9.SVDUAL 切割重走並加粗	
	10.U45 加示第一PIN	



CPU-SK/BK/775/D/GF/[11SC1-920775-02R]



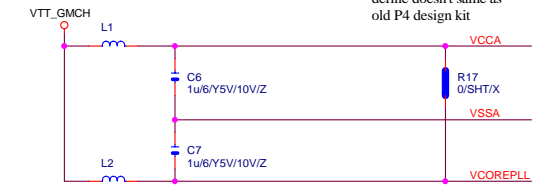
CR CPU RETAINTION/X



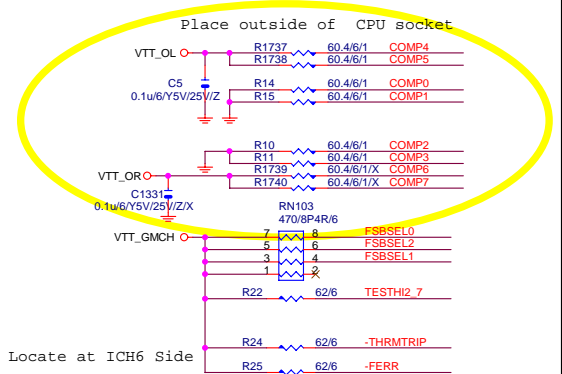
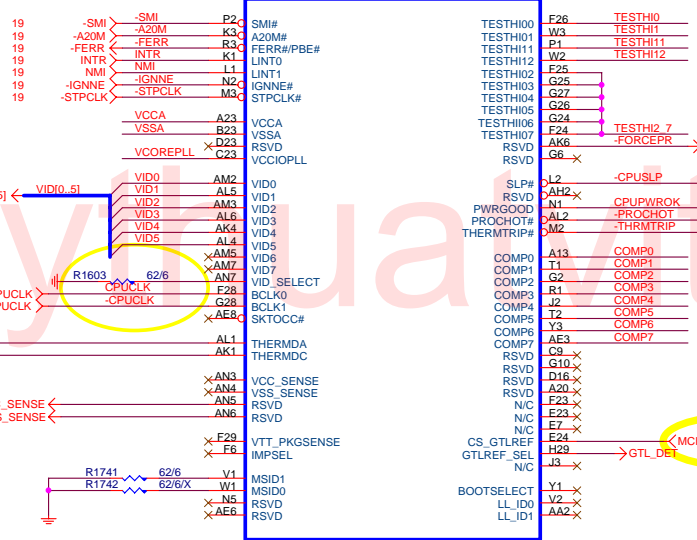
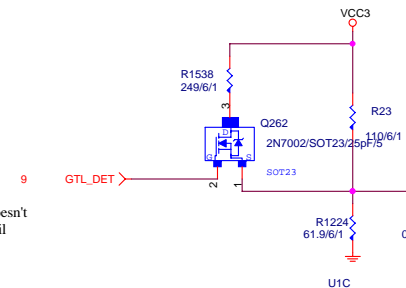
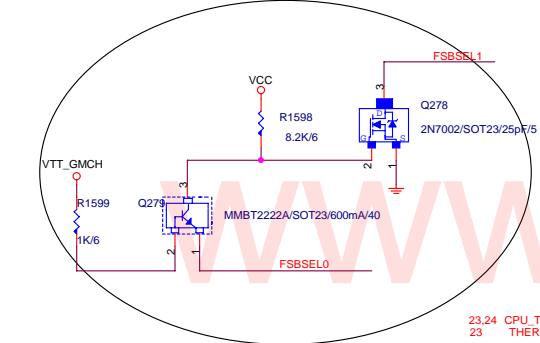
GIGABYTE		
Title P4_LGA775-A		
Size Custom	Document Number 81915MD-G	Rev 1.0
Date: Thursday, August 18, 2005	Sheet 4	of 35

10UH/120mA/8/S/[10LI2-12100A-02_10LI2-12100A-13]

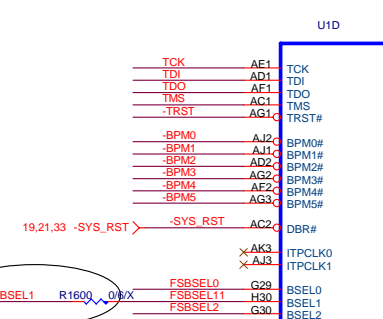
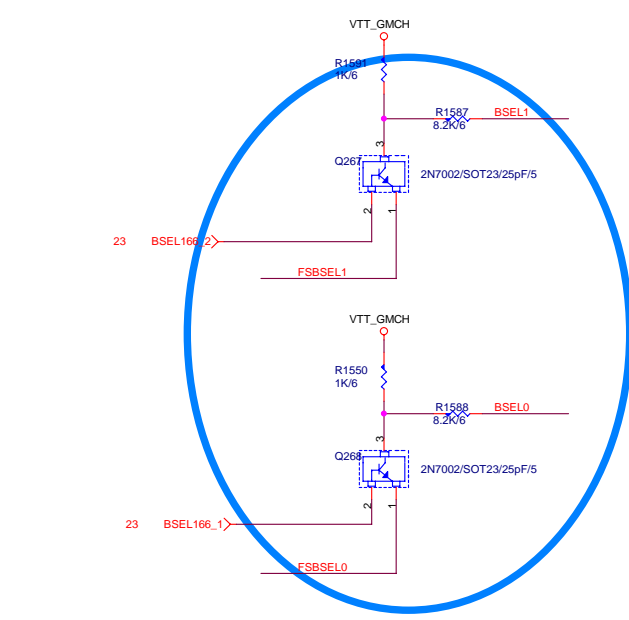
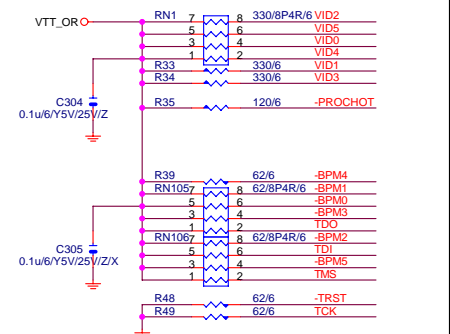
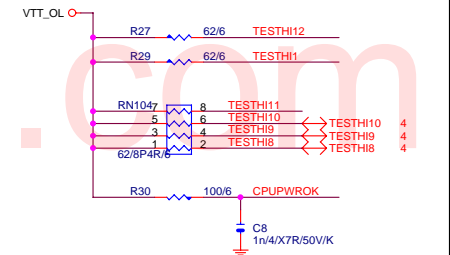
Note:
VCCA & VCOREPLL
define doesn't same as
old P4 design kit



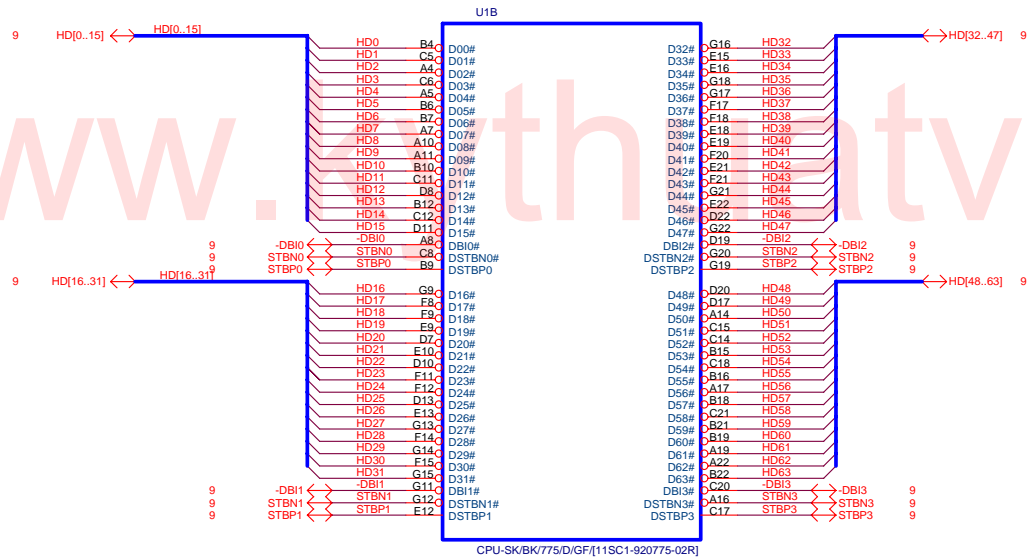
As close as possible to CPU socket



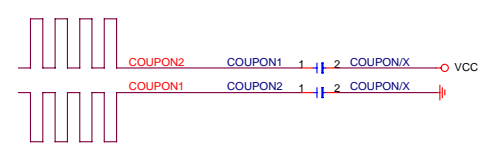
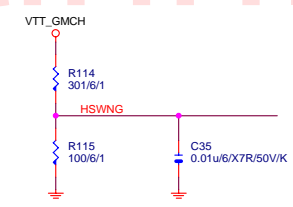
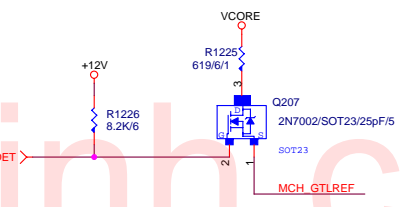
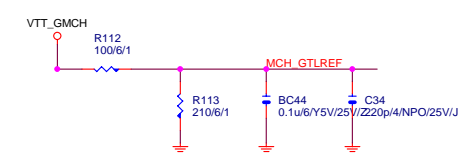
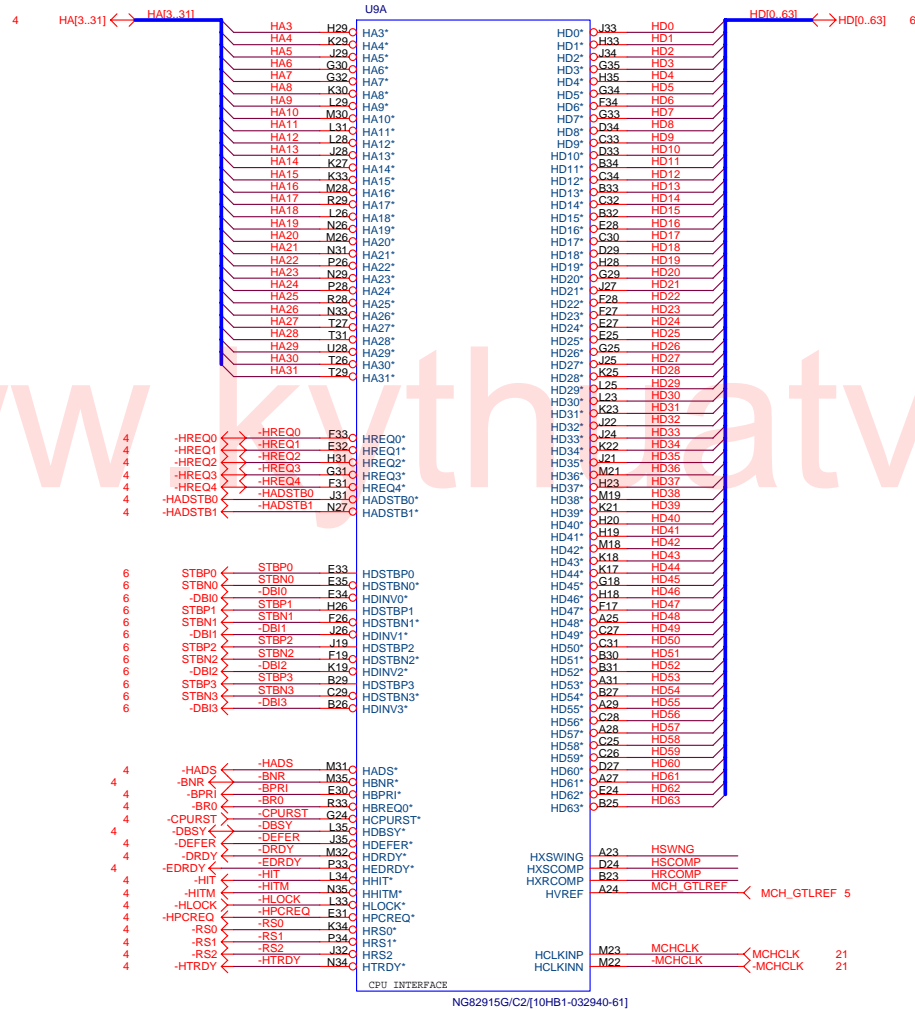
Locate at ICH6 Side



www.tntvithinh.com

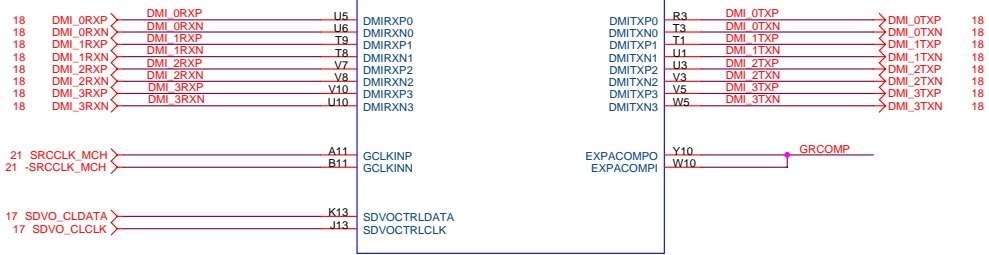
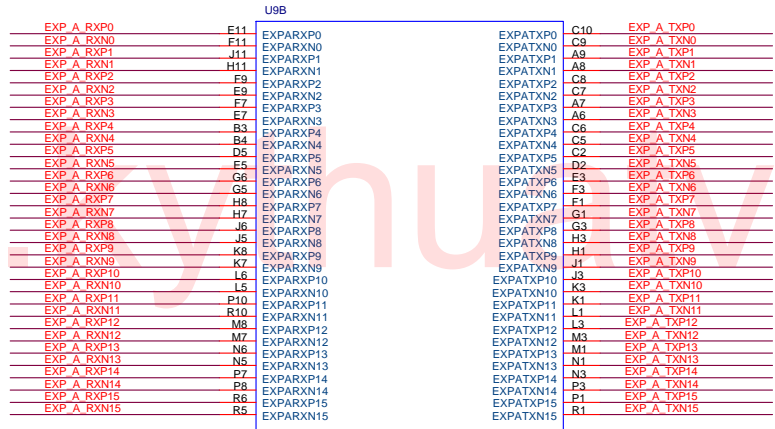
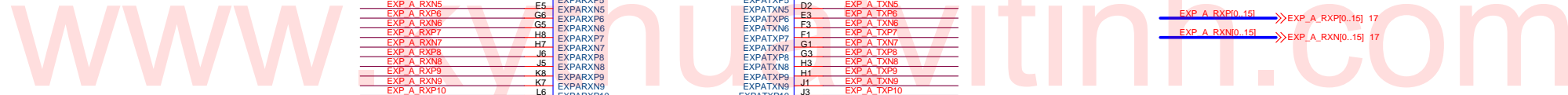


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Title P4_LGA775-C		
Size Custom	Document Number 8I915MD-G	Rev 1.0
Date: Thursday, August 18, 2005	Sheet 6	of 35



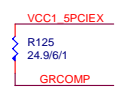
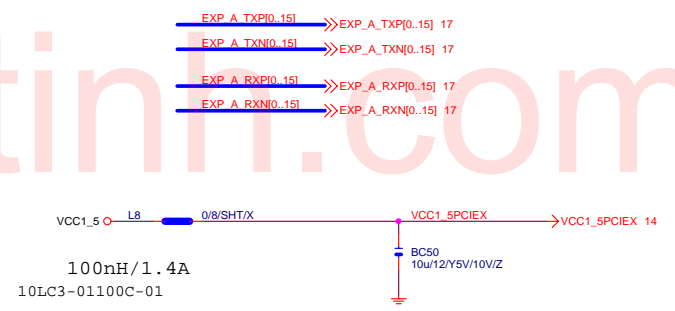
GIGABYTE		
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Size Custom	Document Number 8I915MD-G	Rev 1.0
Date: Thursday, August 18, 2005	Sheet 9	of 35

20:5:7:5:20

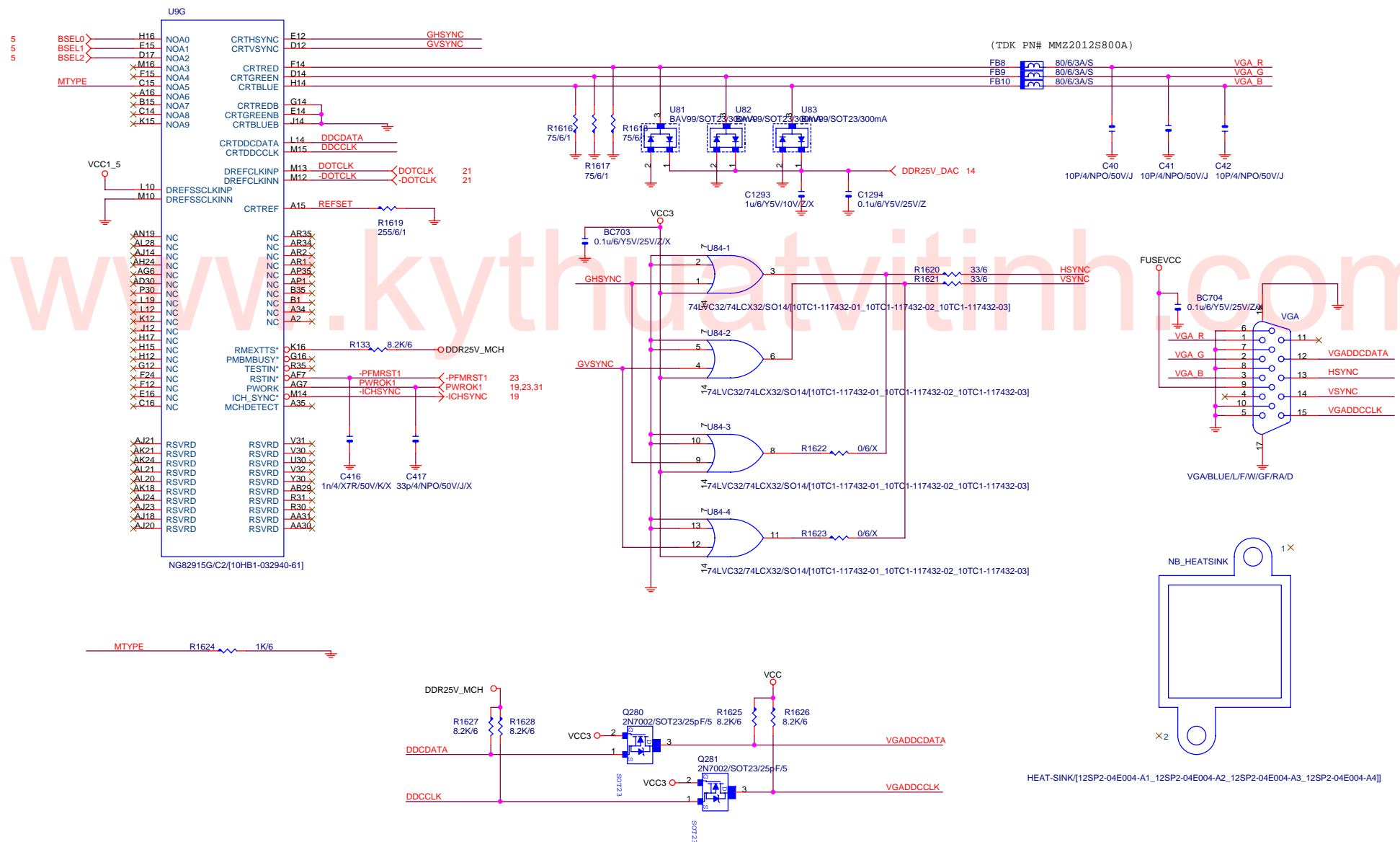


For DVO Function

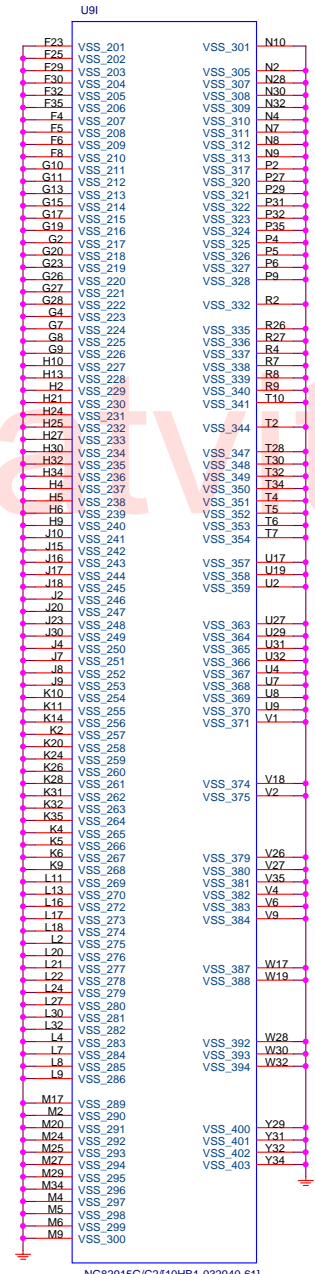
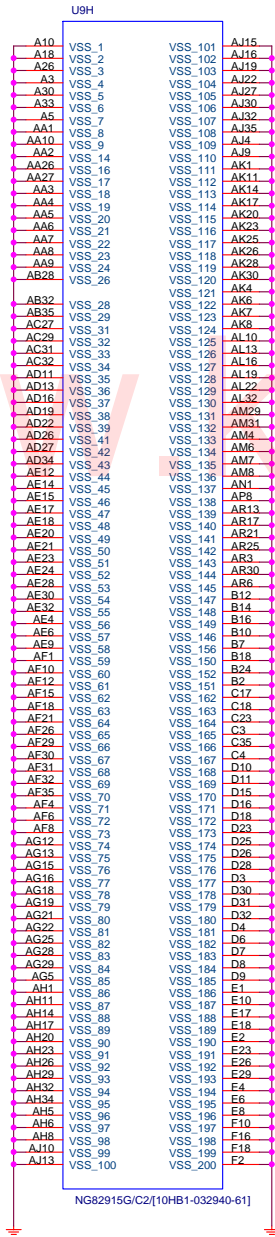
NG82915G/C2[10HB1-032940-61]



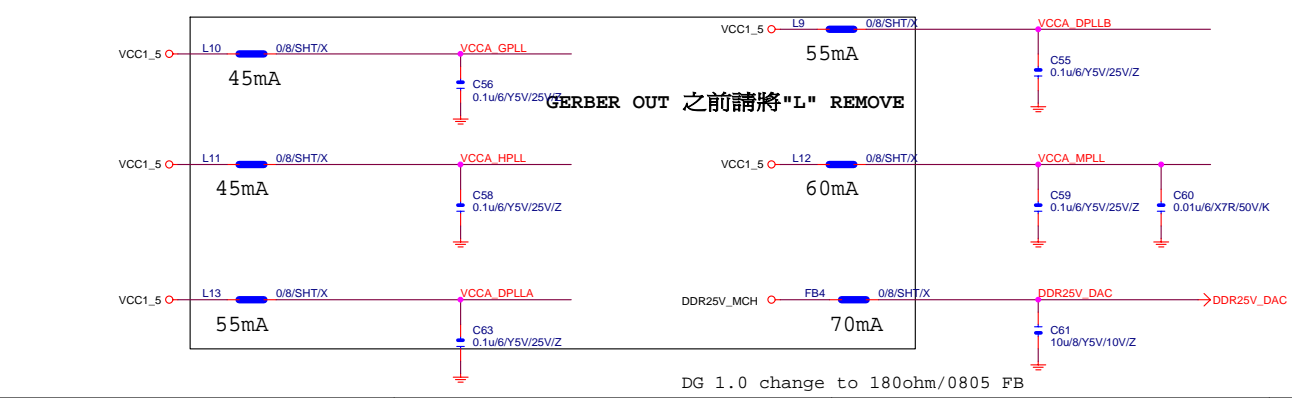
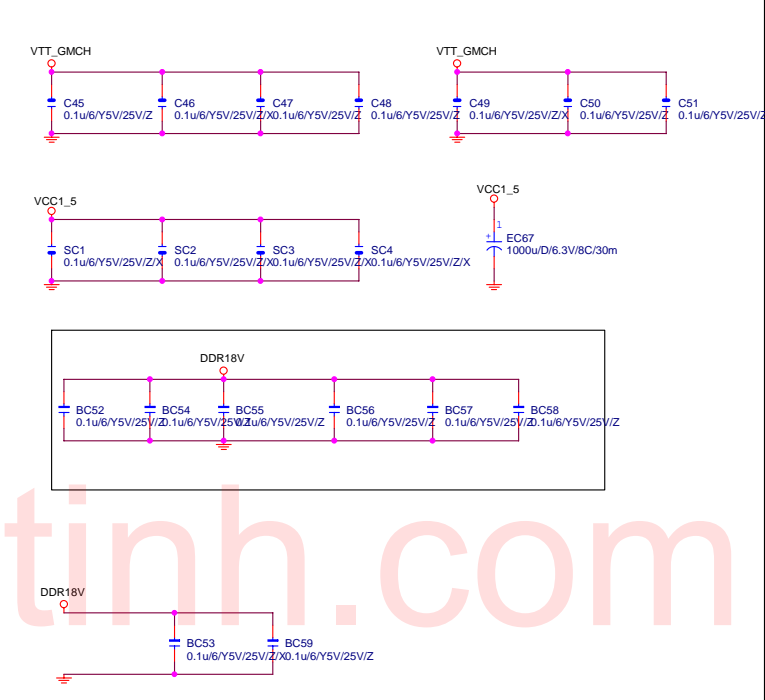
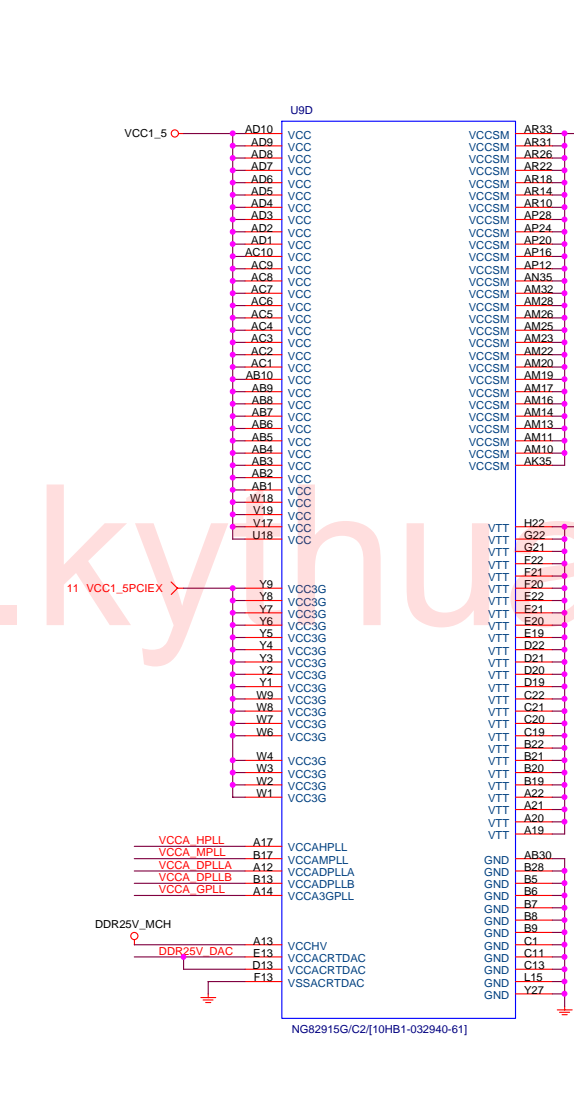
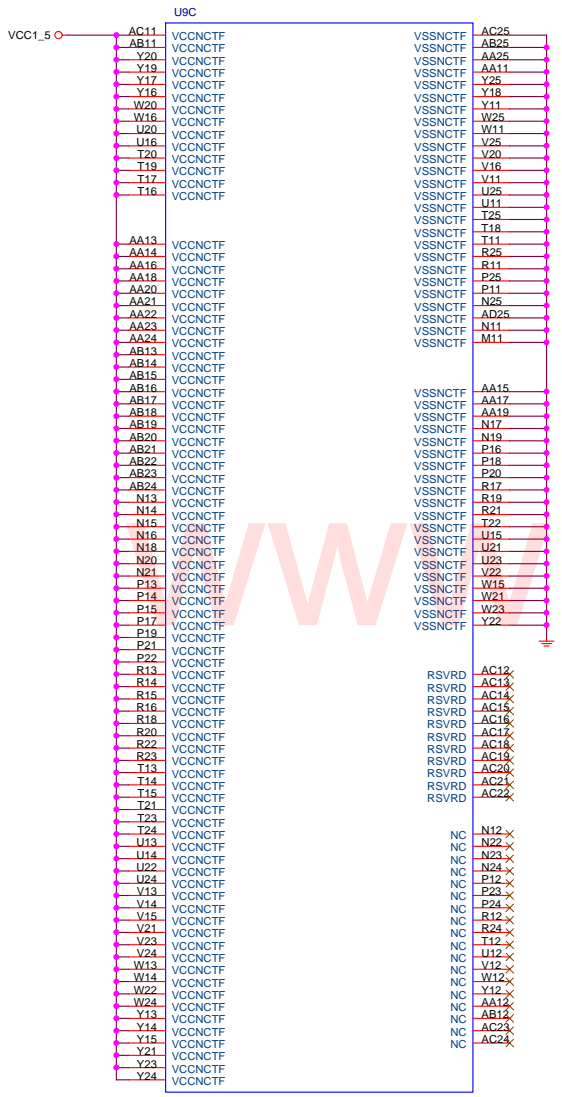
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Title GMCH-PCI E & DMI		
Size Custom	Document Number 8I915MD-G	Rev 1.0
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GIGABYTE		
Title	GMCH-INTERNAL VGA	
Size	Document Number	Rev
Custom	8I915MD-G	1.0
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GIGABYTE		
Title GMCH-GND		
Size	Document Number	Rev
Custom	81915MD-G	1.0
Date:	Thursday, August 18, 2005	Sheet 13 of 35

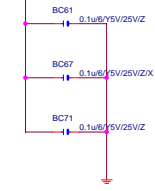


GERBER OUT 之前請將"L" REMOVE

DG 1.0 change to 180ohm/0805 FB

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Title	GMCH-PWR	
Size Custom	Document Number	81915MD-G
Date	Thursday, August 18, 2005	Rev 1.0
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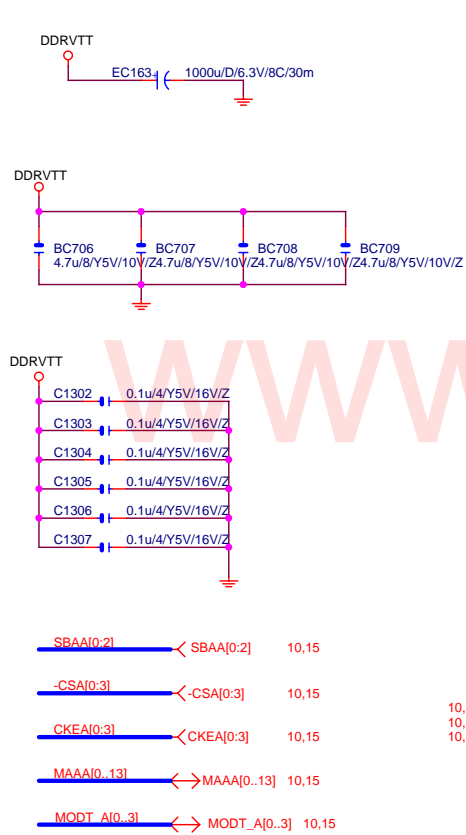
DDR1B1V



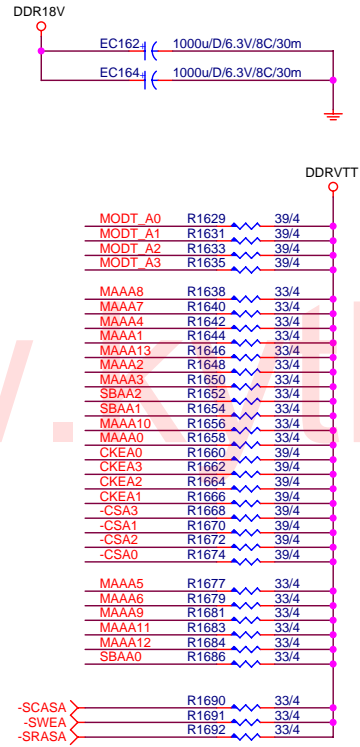
DDR1H

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1430	VSS
1433	VSS
1436	VSS
1439	VSS
1442	VSS
1445	VSS
1448	VSS
1451	VSS
1454	VSS
1457	VSS
1460	VSS
1463	VSS
1466	VSS
1469	VSS
1472	VSS
1475	VSS
1478	VSS
1481	VSS
1484	VSS
1487	VSS
1490	VSS
1493	VSS
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1499	VSS
1502	VSS
1505	VSS
1508	VSS
1511	VSS
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1517	VSS
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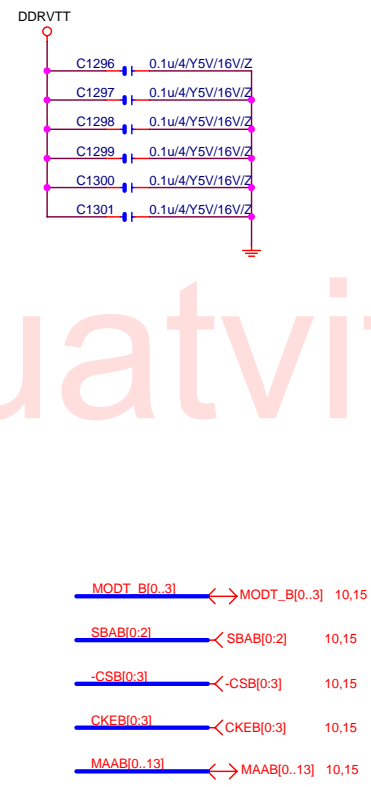
DDRVTT Decouple



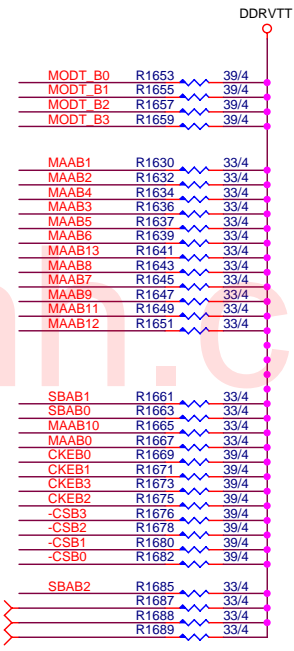
DDR TERMINATION CHANNEL A

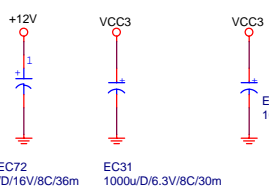


DDRVTT Decouple



CHANNEL B





EXP A_RXP[0..15] >> EXP_A_RXP[0..15] 11
 EXP A_RXN[0..15] >> EXP_A_RXN[0..15] 11
 EXP A_TXP[0..15] >> EXP_A_TXP[0..15] 11
 EXP A_TXN[0..15] >> EXP_A_TXN[0..15] 11

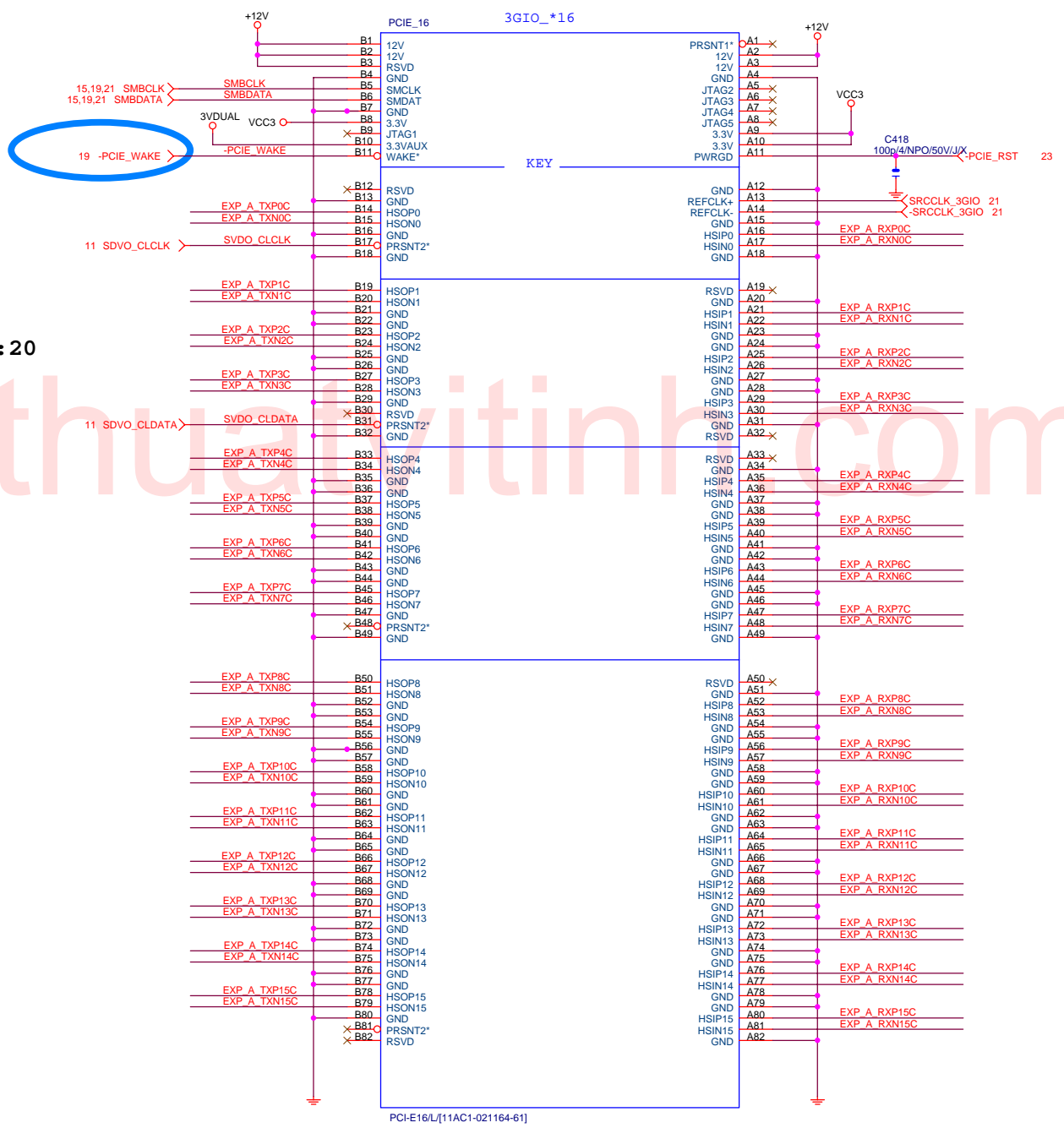
EXP A_TXP0	C70	0.1u/4Y5V/16V/Z	EXP A_TXP0C
EXP A_TXN0	C71	0.1u/4Y5V/16V/Z	EXP A_TXN0C
EXP A_TXP1	C72	0.1u/4Y5V/16V/Z	EXP A_TXP1C
EXP A_TXN1	C73	0.1u/4Y5V/16V/Z	EXP A_TXN1C
EXP A_TXP2	C74	0.1u/4Y5V/16V/Z	EXP A_TXP2C
EXP A_TXN2	C75	0.1u/4Y5V/16V/Z	EXP A_TXN2C
EXP A_TXP3	C76	0.1u/4Y5V/16V/Z	EXP A_TXP3C
EXP A_TXN3	C77	0.1u/4Y5V/16V/Z	EXP A_TXN3C
EXP A_TXP4	C78	0.1u/4Y5V/16V/Z	EXP A_TXP4C
EXP A_TXN4	C79	0.1u/4Y5V/16V/Z	EXP A_TXN4C
EXP A_TXP5	C80	0.1u/4Y5V/16V/Z	EXP A_TXP5C
EXP A_TXN5	C81	0.1u/4Y5V/16V/Z	EXP A_TXN5C
EXP A_TXP6	C82	0.1u/4Y5V/16V/Z	EXP A_TXP6C
EXP A_TXN6	C83	0.1u/4Y5V/16V/Z	EXP A_TXN6C
EXP A_TXP7	C84	0.1u/4Y5V/16V/Z	EXP A_TXP7C
EXP A_TXN7	C85	0.1u/4Y5V/16V/Z	EXP A_TXN7C
EXP A_TXP8	C86	0.1u/4Y5V/16V/Z	EXP A_TXP8C
EXP A_TXN8	C87	0.1u/4Y5V/16V/Z	EXP A_TXN8C
EXP A_TXP9	C88	0.1u/4Y5V/16V/Z	EXP A_TXP9C
EXP A_TXN9	C89	0.1u/4Y5V/16V/Z	EXP A_TXN9C
EXP A_TXP10	C90	0.1u/4Y5V/16V/Z	EXP A_TXP10C
EXP A_TXN10	C91	0.1u/4Y5V/16V/Z	EXP A_TXN10C
EXP A_TXP11	C92	0.1u/4Y5V/16V/Z	EXP A_TXP11C
EXP A_TXN11	C93	0.1u/4Y5V/16V/Z	EXP A_TXN11C
EXP A_TXP12	C94	0.1u/4Y5V/16V/Z	EXP A_TXP12C
EXP A_TXN12	C95	0.1u/4Y5V/16V/Z	EXP A_TXN12C
EXP A_TXP13	C96	0.1u/4Y5V/16V/Z	EXP A_TXP13C
EXP A_TXN13	C97	0.1u/4Y5V/16V/Z	EXP A_TXN13C
EXP A_TXP14	C98	0.1u/4Y5V/16V/Z	EXP A_TXP14C
EXP A_TXN14	C99	0.1u/4Y5V/16V/Z	EXP A_TXN14C
EXP A_TXP15	C100	0.1u/4Y5V/16V/Z	EXP A_TXP15C
EXP A_TXN15	C101	0.1u/4Y5V/16V/Z	EXP A_TXN15C

EXP A_RXP0	SR1	0/4	EXP A_RXP0C
EXP A_RXN0	SR2	0/4	EXP A_RXN0C
EXP A_RXP1	SR3	0/4	EXP A_RXP1C
EXP A_RXN1	SR4	0/4	EXP A_RXN1C
EXP A_RXP2	SR5	0/4	EXP A_RXP2C
EXP A_RXN2	SR6	0/4	EXP A_RXN2C
EXP A_RXP3	SR7	0/4	EXP A_RXP3C
EXP A_RXN3	SR8	0/4	EXP A_RXN3C
EXP A_RXP4	SR9	0/4	EXP A_RXP4C
EXP A_RXN4	SR10	0/4	EXP A_RXN4C
EXP A_RXP5	SR11	0/4	EXP A_RXP5C
EXP A_RXN5	SR12	0/4	EXP A_RXN5C
EXP A_RXP6	SR13	0/4	EXP A_RXP6C
EXP A_RXN6	SR14	0/4	EXP A_RXN6C
EXP A_RXP7	SR15	0/4	EXP A_RXP7C
EXP A_RXN7	SR16	0/4	EXP A_RXN7C
EXP A_RXP8	SR17	0/4	EXP A_RXP8C
EXP A_RXN8	SR18	0/4	EXP A_RXN8C
EXP A_RXP9	SR19	0/4	EXP A_RXP9C
EXP A_RXN9	SR20	0/4	EXP A_RXN9C
EXP A_RXP10	SR21	0/4	EXP A_RXP10C
EXP A_RXN10	SR22	0/4	EXP A_RXN10C
EXP A_RXP11	SR23	0/4	EXP A_RXP11C
EXP A_RXN11	SR24	0/4	EXP A_RXN11C
EXP A_RXP12	SR25	0/4	EXP A_RXP12C
EXP A_RXN12	SR26	0/4	EXP A_RXN12C
EXP A_RXP13	SR27	0/4	EXP A_RXP13C
EXP A_RXN13	SR28	0/4	EXP A_RXN13C
EXP A_RXP14	SR29	0/4	EXP A_RXP14C
EXP A_RXN14	SR30	0/4	EXP A_RXN14C
EXP A_RXP15	SR31	0/4	EXP A_RXP15C
EXP A_RXN15	SR32	0/4	EXP A_RXN15C

18	PCIE_OP0	PCIE_OP0	R3	0/4/X	EXP A_TXP0C
18	PCIE_ON0	PCIE_ON0	R4	0/4/X	EXP A_TXN0C
18	PCIE_OP1	PCIE_OP1	R12	0/4/X	EXP A_TXP1C
18	PCIE_ON1	PCIE_ON1	R18	0/4/X	EXP A_TXN1C
18	PCIE_OP2	PCIE_OP2	SR37	0/4/X	EXP A_TXP2C
18	PCIE_ON2	PCIE_ON2	SR38	0/4/X	EXP A_TXN2C
18	PCIE_OP3	PCIE_OP3	SR39	0/4/X	EXP A_TXP3C
18	PCIE_ON3	PCIE_ON3	SR40	0/4/X	EXP A_TXN3C

18	PCIE_IP0	PCIE_IP0	R5	0/4/X	EXP A_RXP0C
18	PCIE_IN0	PCIE_IN0	R9	0/4/X	EXP A_RXN0C
18	PCIE_IP1	PCIE_IP1	R13	0/4/X	EXP A_RXP1C
18	PCIE_IN1	PCIE_IN1	R19	0/4/X	EXP A_RXN1C
18	PCIE_IP2	PCIE_IP2	SR45	0/4/X	EXP A_RXP2C
18	PCIE_IN2	PCIE_IN2	SR46	0/4/X	EXP A_RXN2C
18	PCIE_IP3	PCIE_IP3	SR47	0/4/X	EXP A_RXP3C
18	PCIE_IN3	PCIE_IN3	SR48	0/4/X	EXP A_RXN3C

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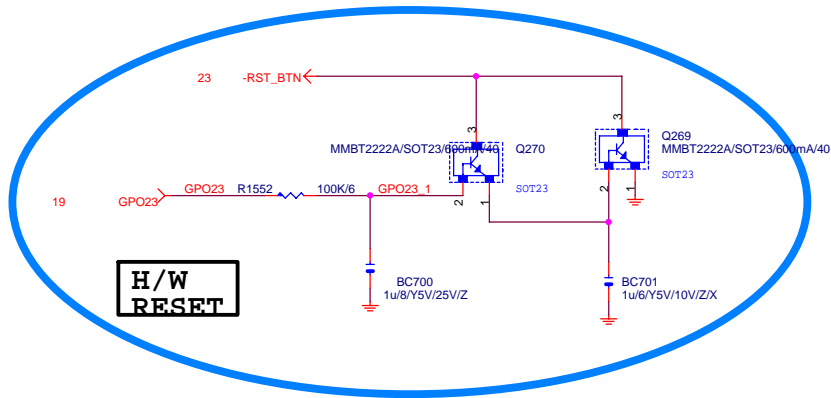


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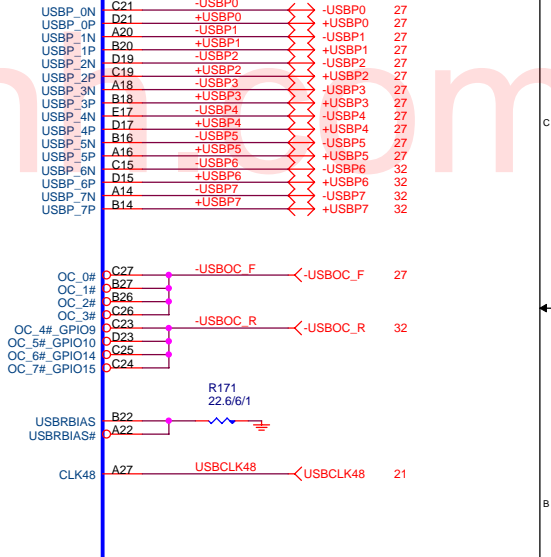
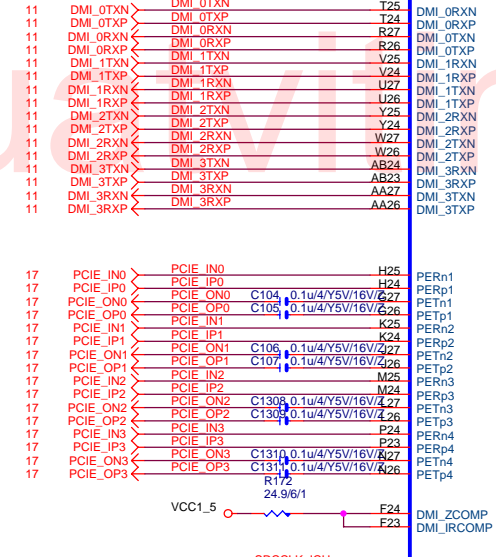
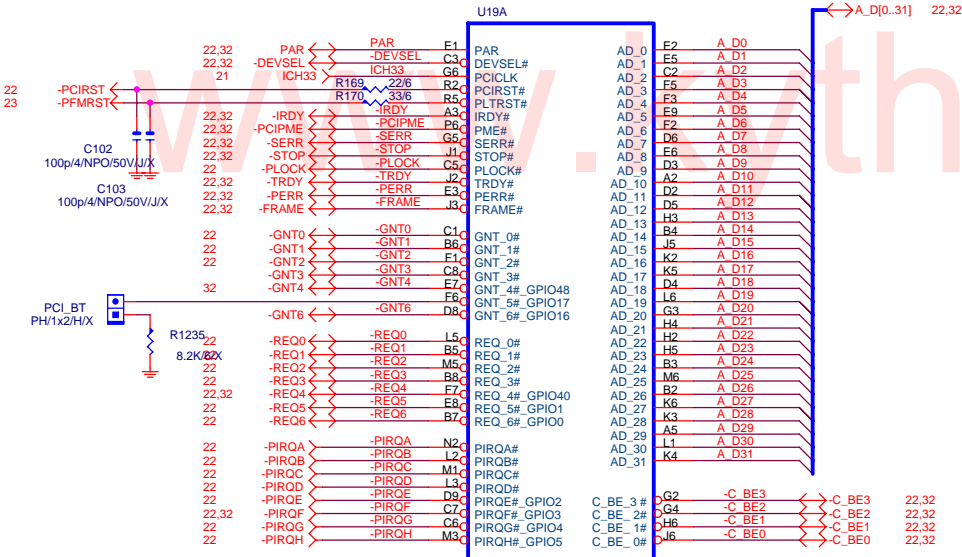
PCI EXPRESS * 16

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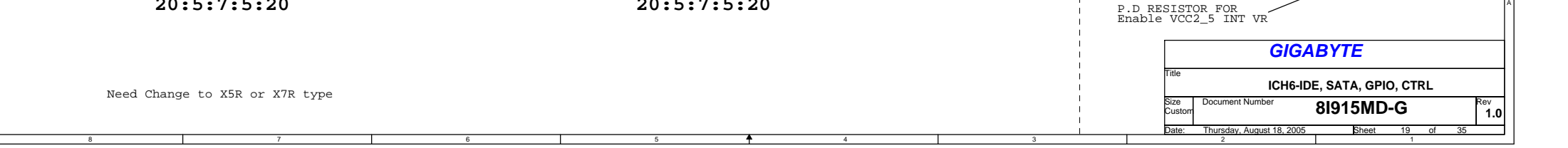
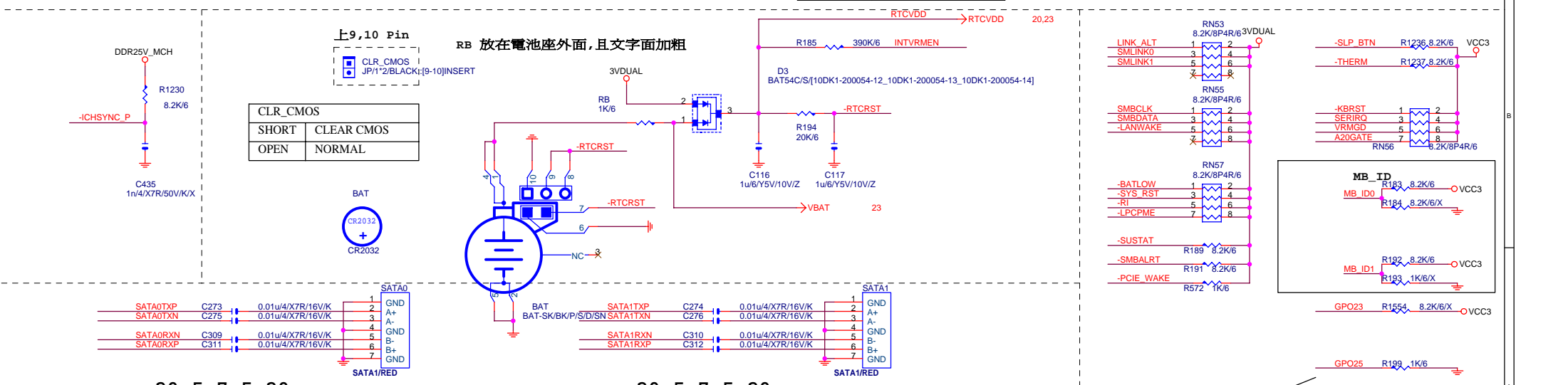
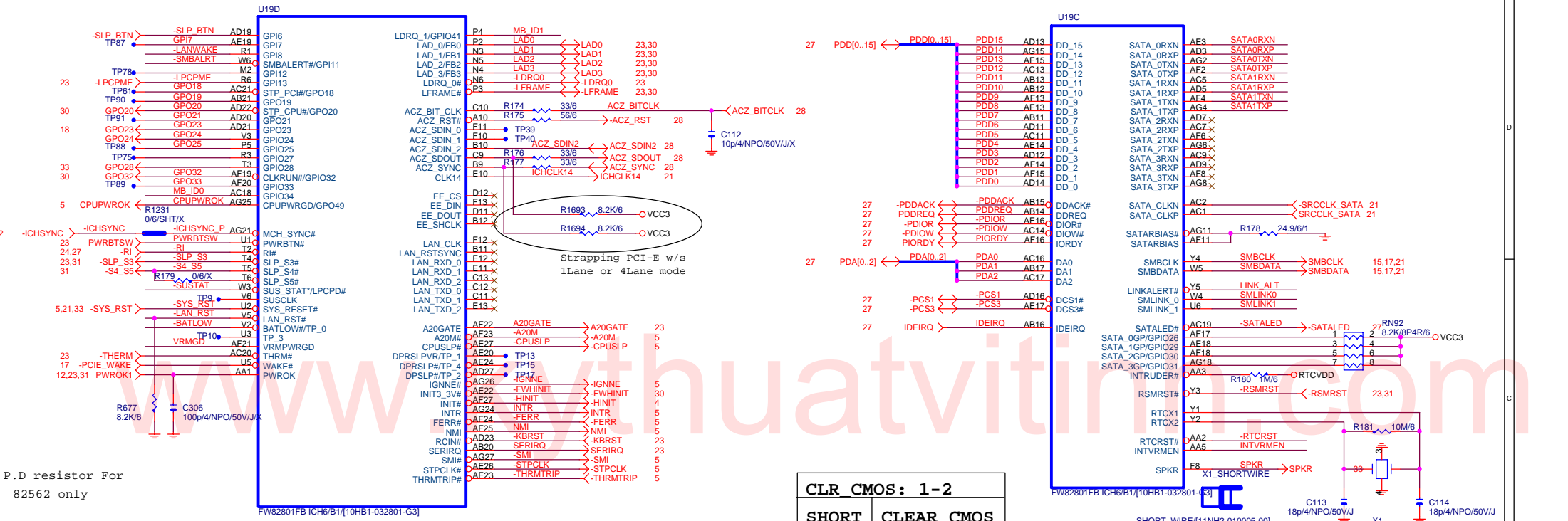


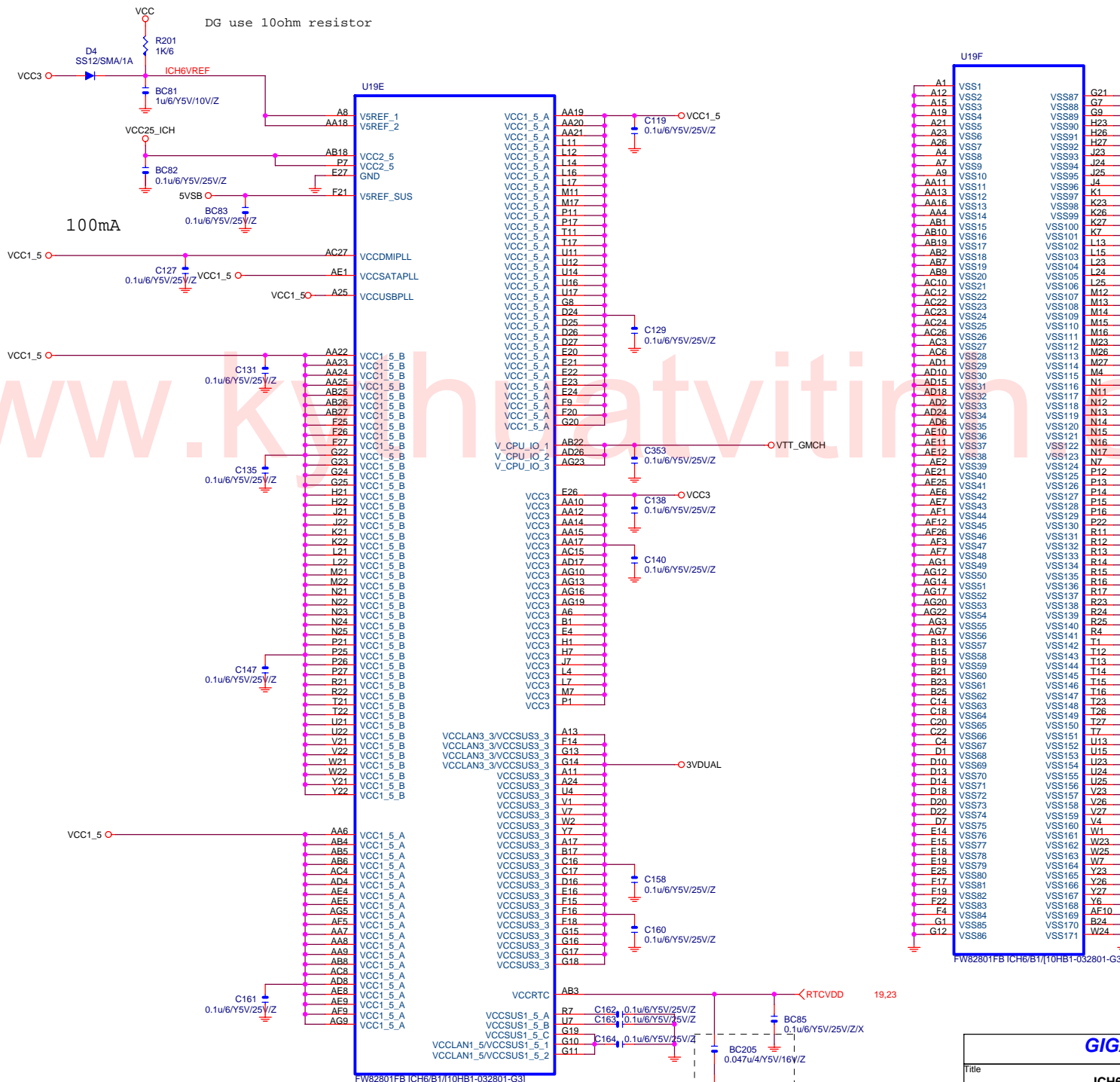
DMI Connection Note
 GMCH TX Pin Need Connect to ICH6 RX Pin
 ICH6 TX Pin Need Connect to GMCH RX Pin



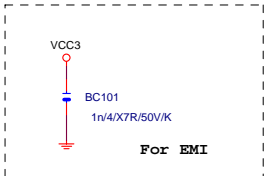
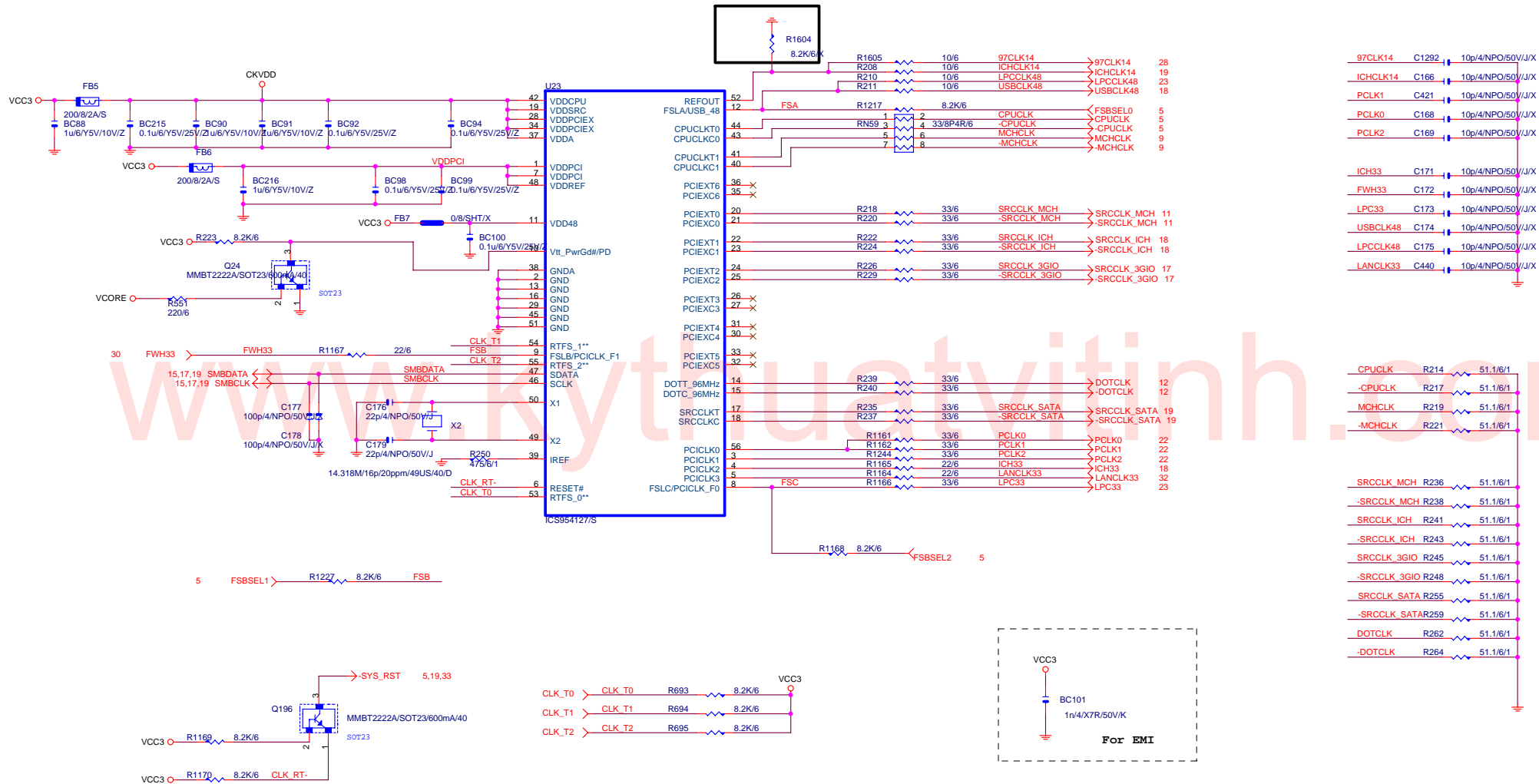
FW82801FB ICH6/B1(10HB1-032801-G3)

GIGABYTE		
Title		
ICH6-PCI, DMI, LAN, USB		
Size	Document Number	Rev
B	81915MD-G	1.0
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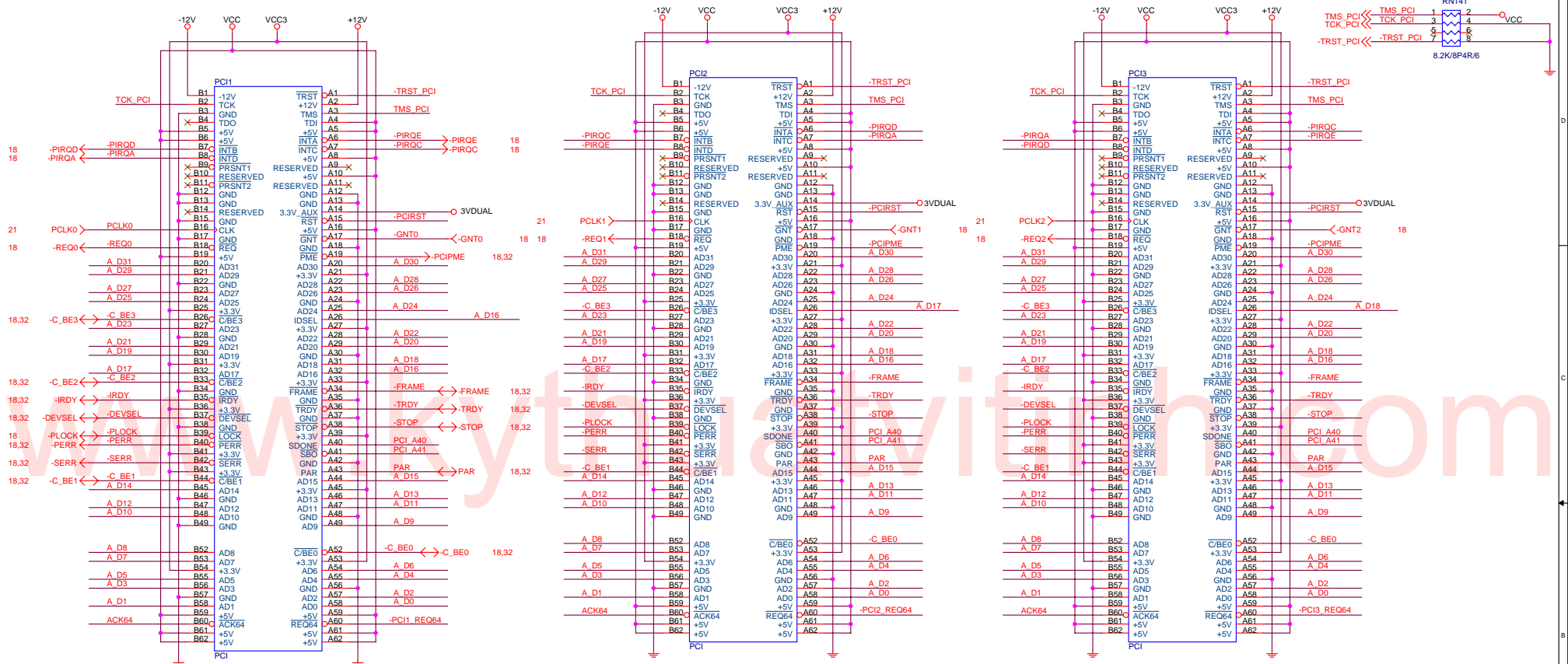




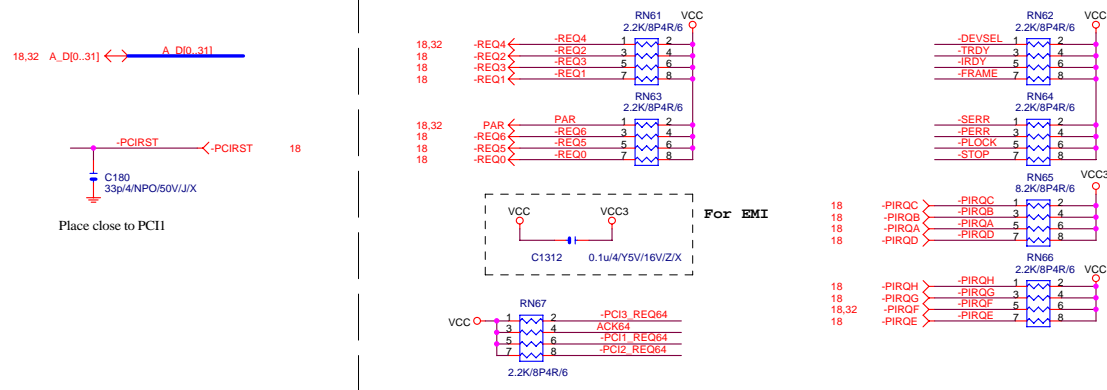
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ICH6-PWR & GND		
Title	Document Number	Rev
	81915MD-G	1.0
Date: Thursday, August 18, 2005	Sheet	20 of 35



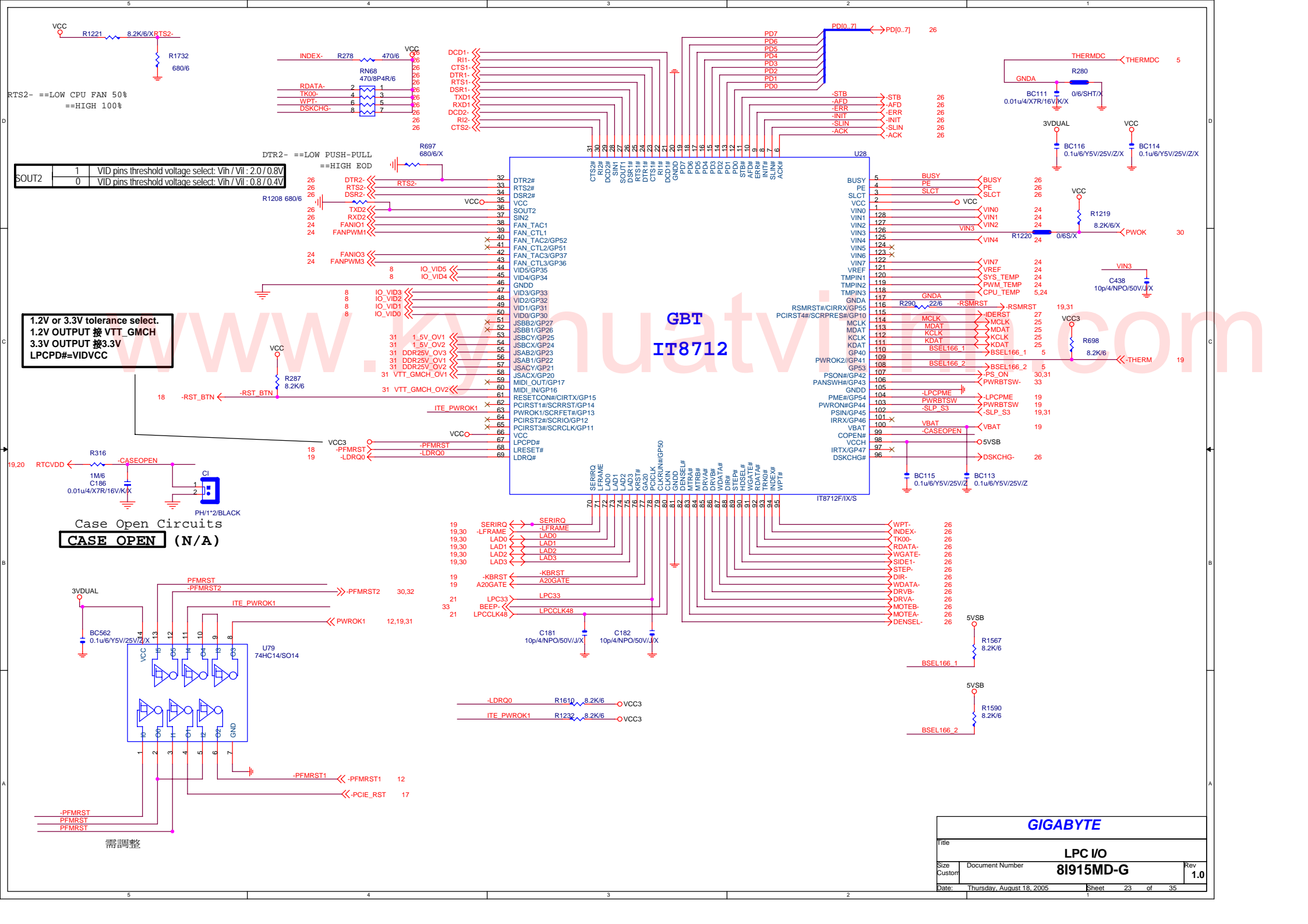
GIGABYTE		
Title CK410M/GBT_CLK_GEN		
Size Custom	Document Number 81915MD-G	Rev 1.0
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AD16 / -PIRQ (E-D-C-A) / -REQ0 / -GNT0



GIGABYTE		
PCI SLOT		
8I915MD-G		
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SOUT2	1	VID pins threshold voltage select: Vih / Vil : 2.0 / 0.8V
	0	VID pins threshold voltage select: Vih / Vil : 0.8 / 0.4V

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

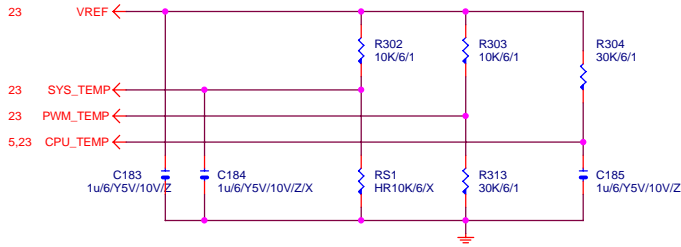
GBT
 IT8712

Case Open Circuits
CASE OPEN (N/A)

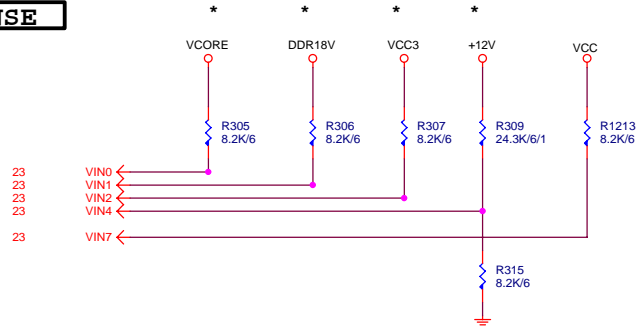
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Title LPC I/O		
Size Custom		Document Number 81915MD-G
Date: Thursday, August 18, 2005		Rev 1.0
Sheet 23		of 35

需調整

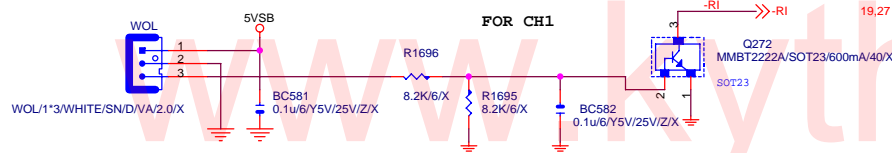
TEMP. SENSE



VOLTAGE SENSE



CPU/SYS FAN

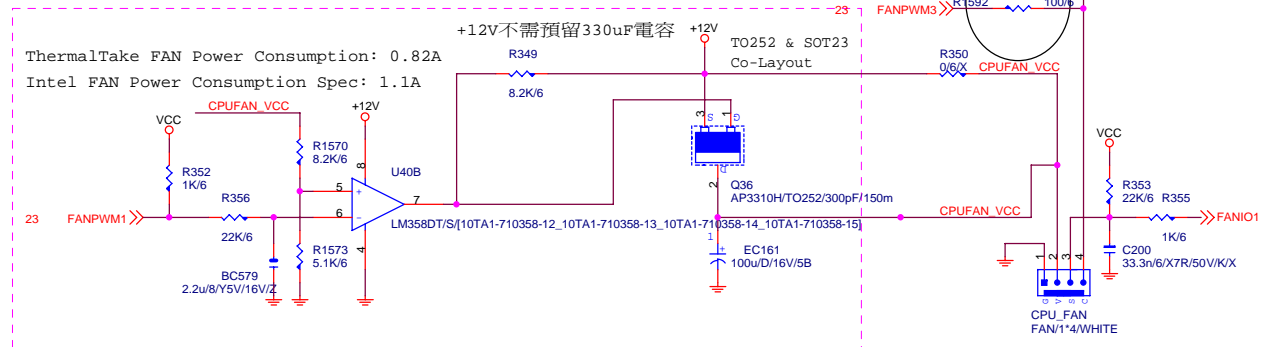
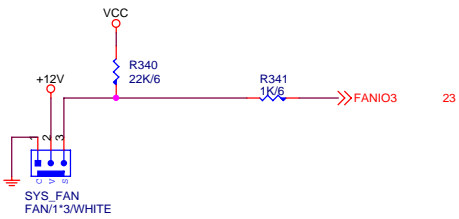


If use PBSS5240 lpcs : (non airflow)

- CPUFAN_VCC=12V: Temp=40 deg
- CPUFAN_VCC=11V: Temp=82 deg
- CPUFAN_VCC=10V: Temp=70 deg
- CPUFAN_VCC= 9V: Temp=110 deg
- CPUFAN_VCC= 8V: Temp>200 deg

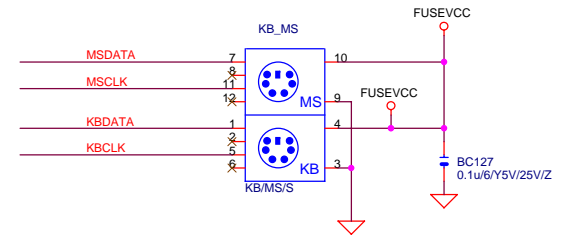
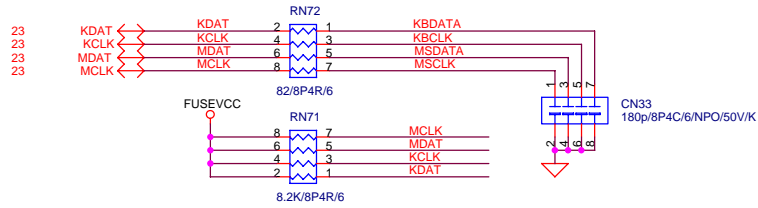
If use PBSS5240 lpcs : (with airflow)

- CPUFAN_VCC=12V: Temp=33 deg
- CPUFAN_VCC=11V: Temp=62 deg
- CPUFAN_VCC=10V: Temp=86 deg
- CPUFAN_VCC= 9V: Temp=117 deg
- CPUFAN_VCC= 8V: Temp>122 deg

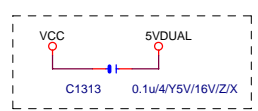


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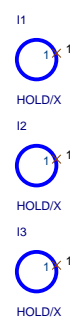
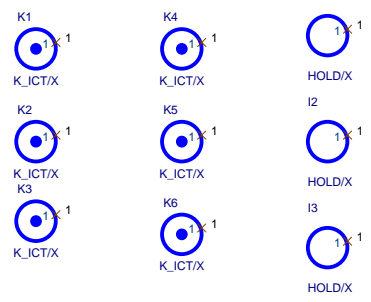
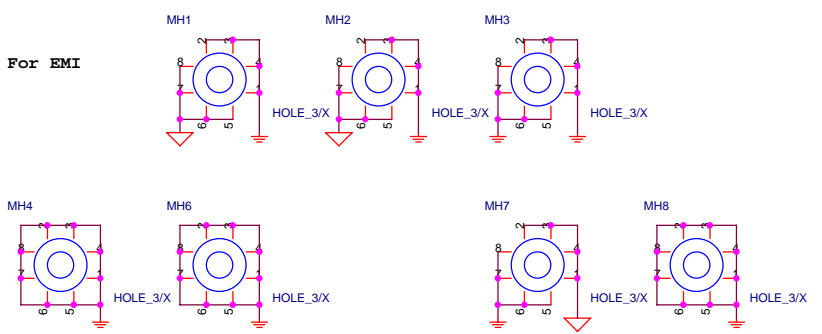
Title		
HWM/FANCI/BIOS		
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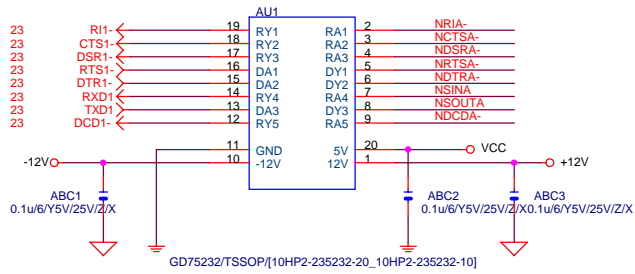


For EMI

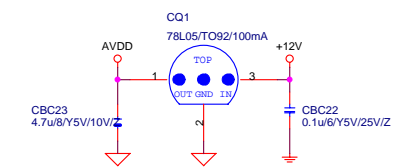
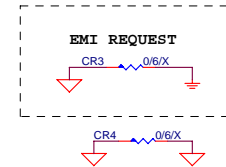
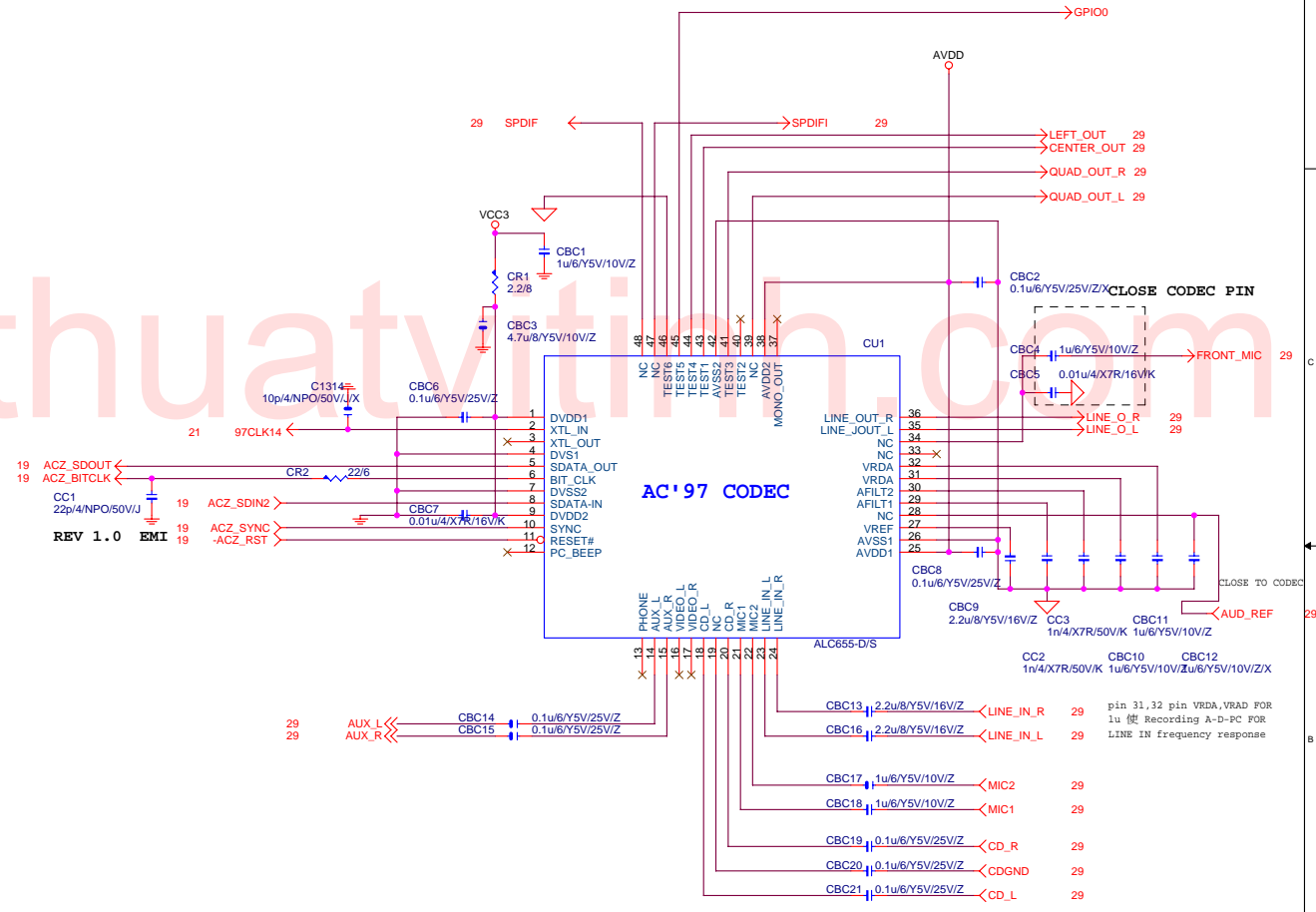


GIGABYTE		
Title PS/2 KB & MS		
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COMA / COMB

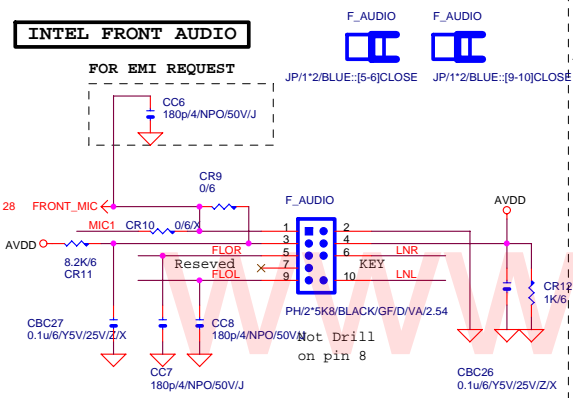


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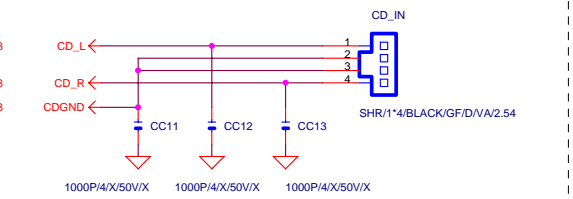


GIGABYTE		
AUDIO (ALC655)		
Title		
Size	Document Number	Rev
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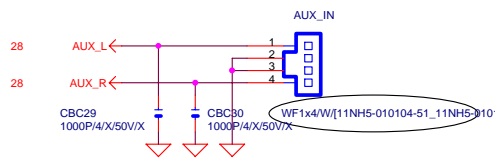
INTEL FRONT AUDIO



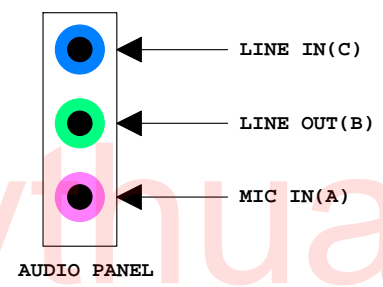
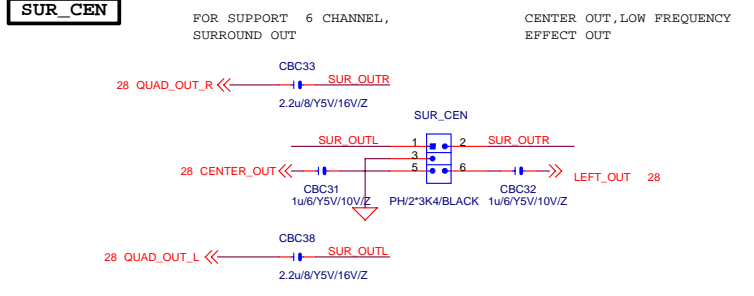
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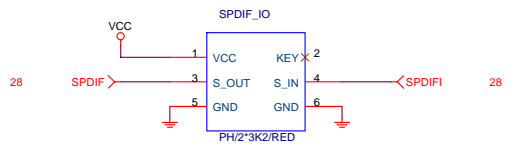
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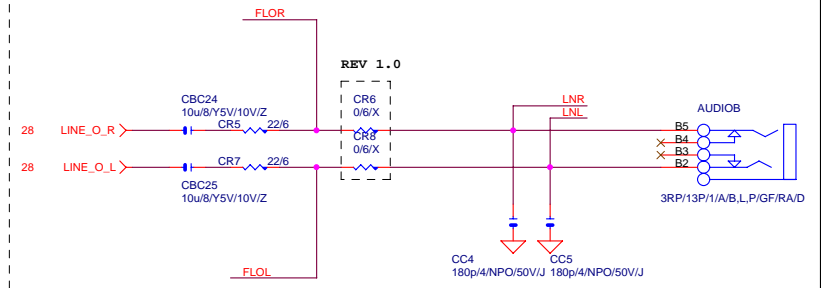
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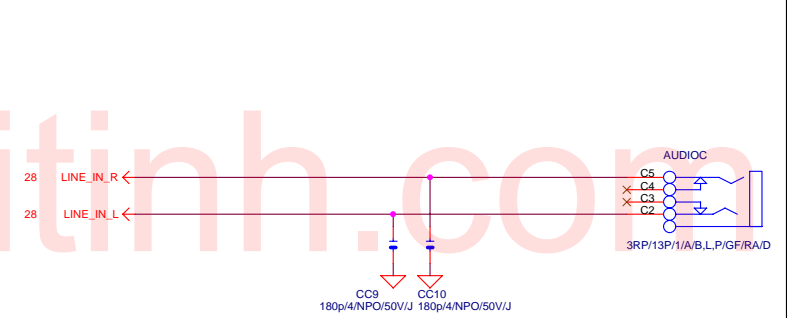
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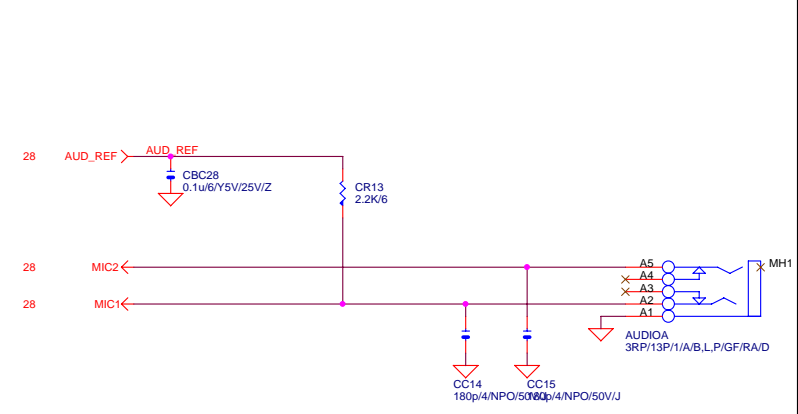
LINE OUT



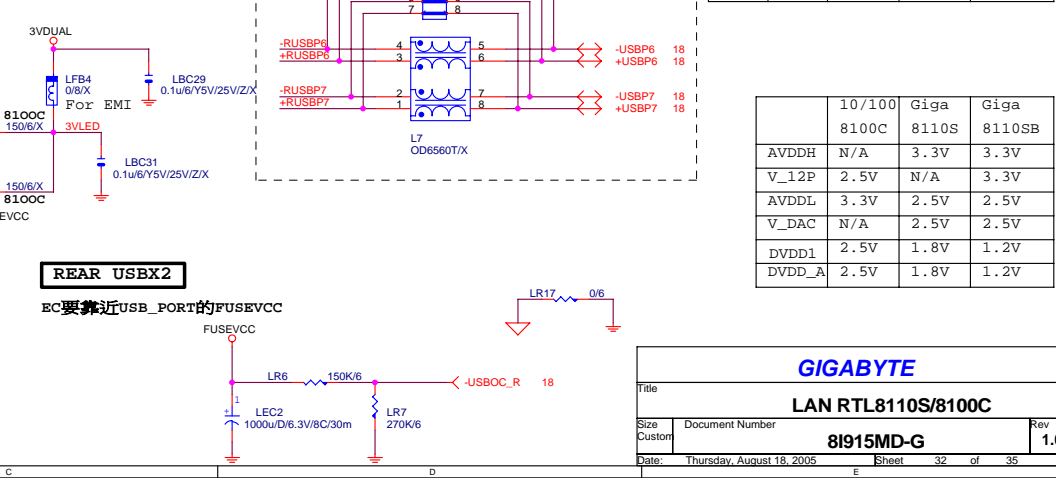
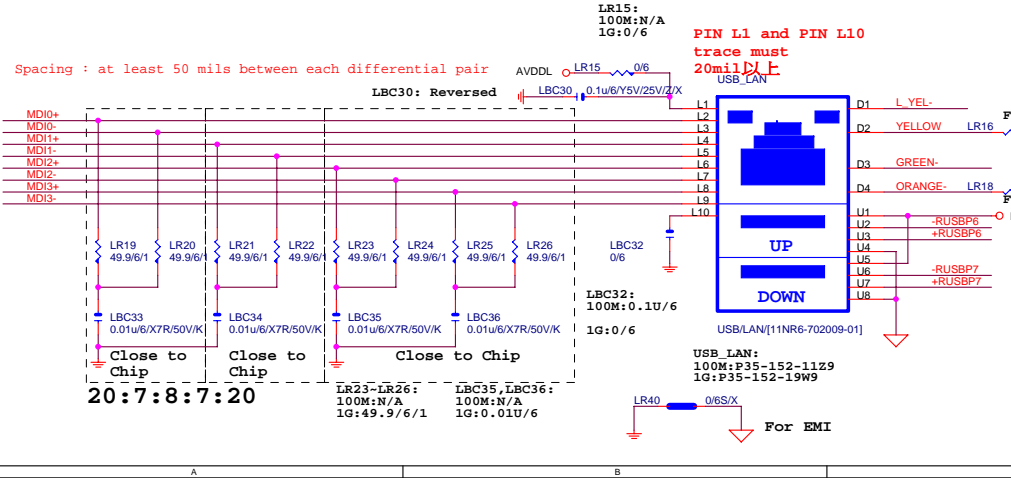
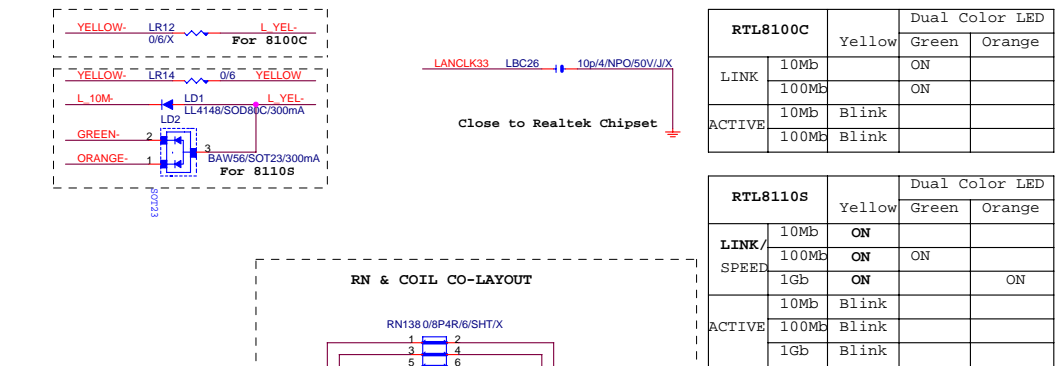
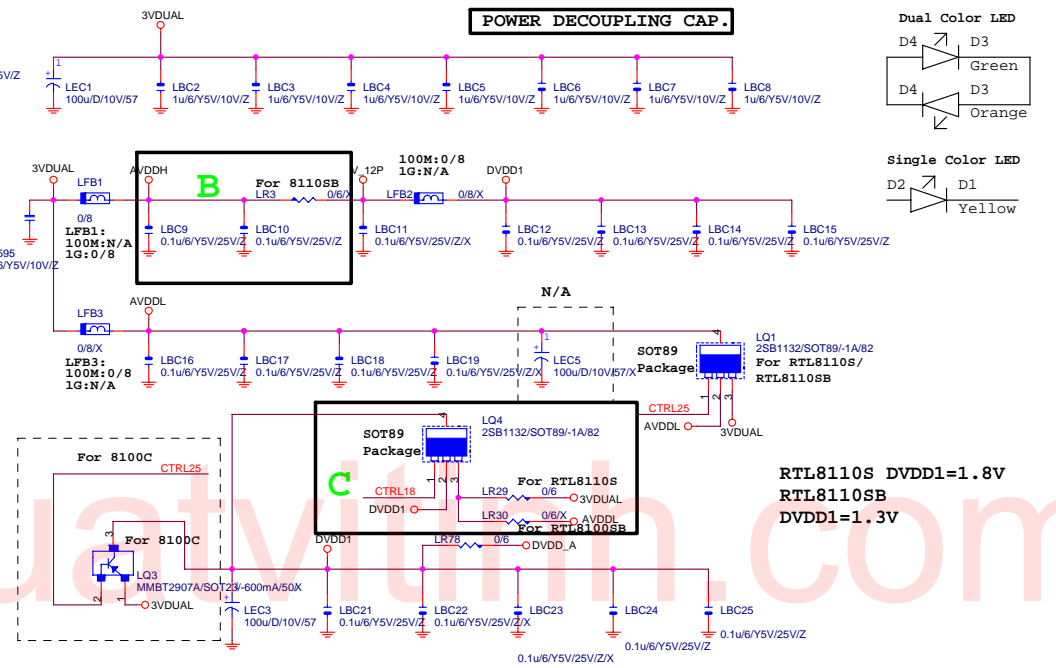
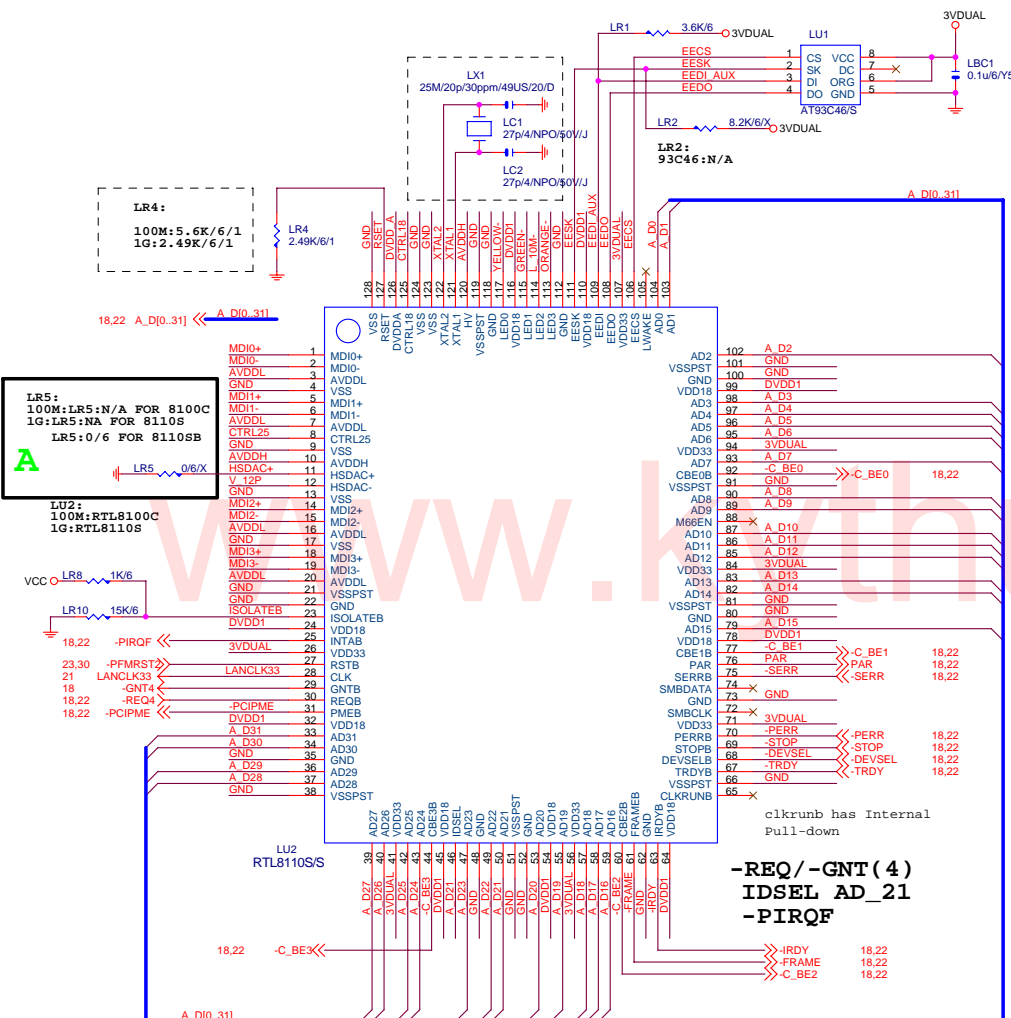
LINE-IN



MIC

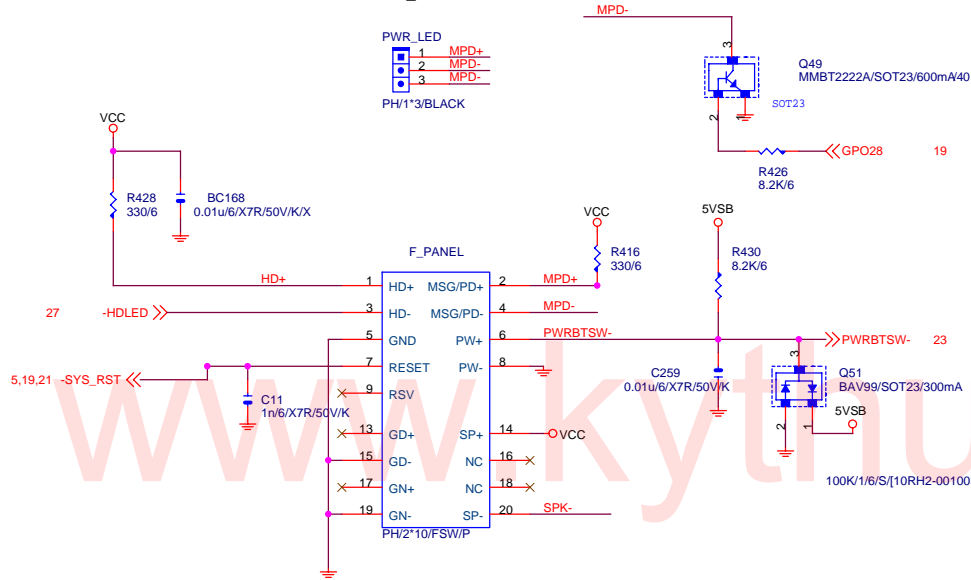


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AUDIO OUTPUT			
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INTEL FRONT PANEL

3 PIN POWER LED
LAYOUT PLACE CLOSE
TO F_PANEL

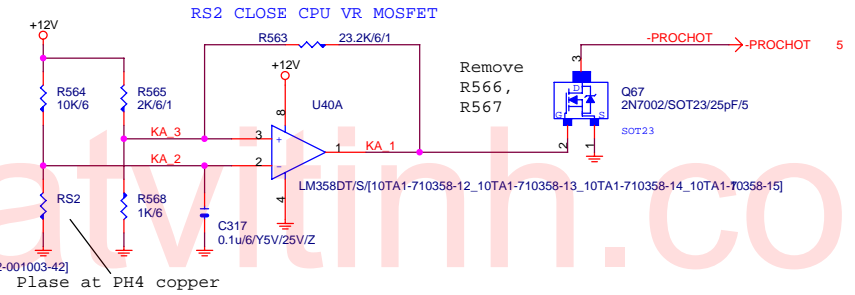


PROCESSOR HOT

(N/A)

如果要用2N7002需注意OP output
hi時的電壓是否遠大於2V。

asserted at 130 degree (RS2=720 ohm)
deasserted at 115 degree (RS2=1270 ohm)
KA393改為LM358，電源pin改接+12V，Prochot#溫度需重新調整之。



States for green LED NO1 GPO22 only S1 PROGRAMMING LOW

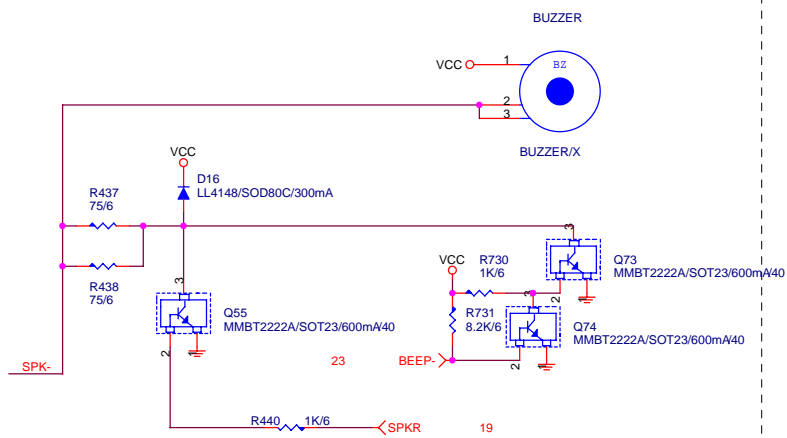
LED States	ACPI States	GPO28
ON	S1,S3	0
OFF	S0,S5	1

(GPO22 DEFAULT HIGH, main power)

States for a single-color power LED

LED States	ACPI States	GPO25	GPO27	GPO24
OFF	S1,S3,S5	1	1	NO1
Steady Green	S0	1	1	1
Blinking Green	S0(message waiting)	1	B	1

LED States	ACPI States	GPO25	GPO27	GPO22
OFF	S5	1	1	X
Steady Green	S0	1	1	1
Blinking Green	S0(message waiting)	1	B	1
Steady Yellow	S1,S3	1	0	NO1
Blinking Yellow	S1,S3(message waiting)	1	B	NO1



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FRONT PANEL			
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ICH6 GPIO Table:

NAME	PWR LANE	USAGE	NAME	PWR LANE	USAGE
GPI0	V5REF	M/B ID (-REQ6)	GPI41	VCC3	M/B ID
GPI1	V5REF	-REQ5	GPO48	VCC3	-GNT4
GPI2	V5REF	-PIRQE	GPO49	V-CPUIO	CPUPWOK
GPI3	V5REF	-PIRQF			
GPI4	V5REF	-PIRQG			
GPI5	V5REF	-PIRQH			
GPI6	VCC3	-SLP_BTN			
GPI7	VCC3	DUAL BIOS			
GPI8	3VDAUL	-LANWAKE			
GPI9	3VDAUL	-USBOC4			
GPI10	3VDAUL	-USBOC5			
GPI11	3VDAUL	-SMBALT			
GPI12	VCC3	ATX DET			
GPI13	3VDAUL	-LPCPME			
GPI14	3VDAUL	-USBOC6			
GPI15	3VDAUL	-USBOC7			
GPO16	VCC3	CPU OV1 (-GNT6)			
GPO17	VCC3	-GNT5			
GPO18	VCC3	CPU OV2			
GPO19	VCC3	DUAL BIOS			
GPO20	VCC3	BIOS T-BLOCK			
GPO21	VCC3	DUAL BIOS			
GPO23	VCC3	DDR OV0			
GPI024	3VDAUL	GREEN LED			
GPI025	3VDAUL	DDR OV1			
GPI26	VCC3	SATA_GP0			
GPI027	3VDAUL	+PWRLED			
GPI028	3VDAUL	-PWRLED			
GPI29	VCC3	SATA_GP1			
GPI30	VCC3	SATA_GP2			
GPI31	VCC3	SATA_GP3			
GPI032	VCC3	BIOS_WP			
GPI033	VCC3	AZALIA_DET			
GPI034	VCC3	M/B ID			
GPI40	V5REF	-REQ4			

PWROK/RESET Table:

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

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Title			GPIO/RESET TABLE		
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