

GA-M61VME-S2

SHEET TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	PROCESSOR HT INTERFACE
05	PROCESSOR DDR2 INTERFACE
06	PROCESSOR CONTROL & DEBUG
07	PROCESSOR Power & Gnd
08	DIMM 1,2
09	DIMM TERMINATION
10	DDR2 POWER
11	MCP61-CPU
12	MCP61-PCie
13	MCP61-DAC, RGMII
14	MCP61-PCI
15	MCP61-SATA, IDE
16	MCP61-USB, HD-Audio, GPIO
17	MCP61-Power, Gnd
18	PCI EXPRESS x16, x1 SLOT
19	PCI 1,2,SLOT
20	ITE 8716GB/CX
21	Realtek 8201 CL
22	H/W MONITOR & FAN CONTROL
23	IDE/FDD/COM/LPT
24	F_USB/ R_USB
25	ALC883 HD-AUDIO

SHEET TITLE

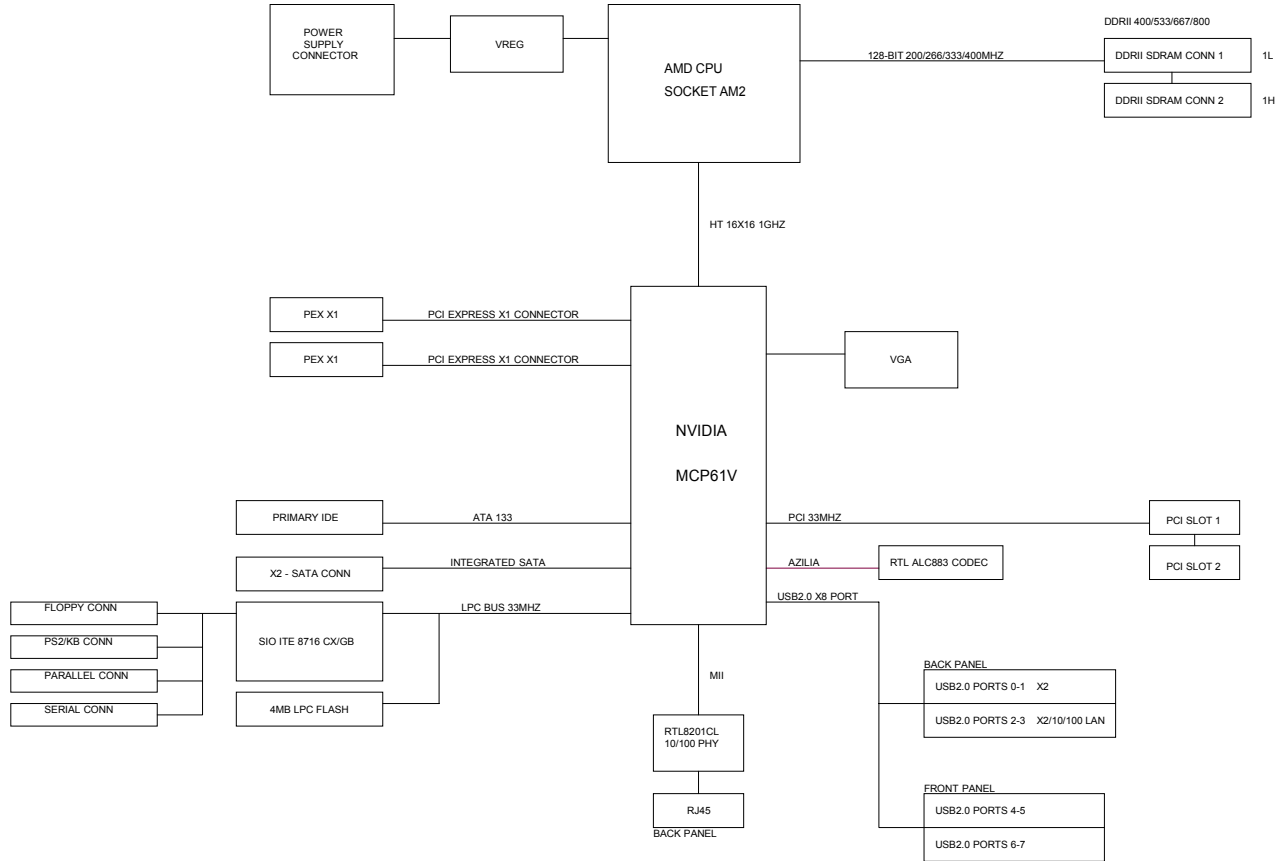
Revision: 1.02

26	AUDIO JACK, L_OUT, F_AUDIO
27	FRONT PANEL POWER SEQUENCE
28	ATX POWER, BIOS, VCC12_DUAL, VDDA25
29	PWM ISL6566

GIGABYTE

Title			
BLOCK DIAGRAM			
Size	Document Number	Rev	
Custom	GA-M61VME-S2	1.02	
Date:	Friday, September 15, 2006	Sheet	1 of 30

BLOCK DIAGRAM

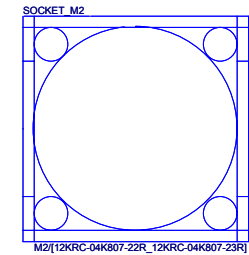
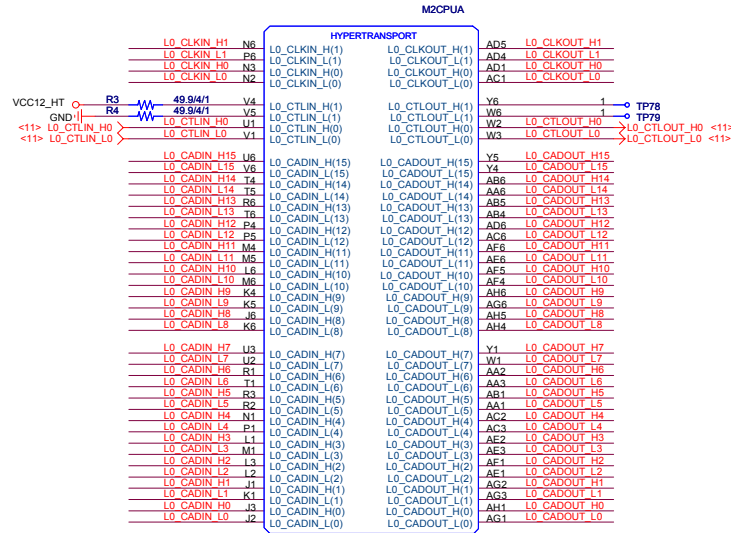


GIGABYTE			
Title			
BLOCK DIAGRAM			
Size	Document Number	Rev	
Custom	GA-M61VME-S2	1.02	
Date:	Thursday, September 14, 2006	Sheet	3 of 30

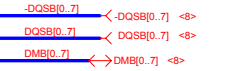
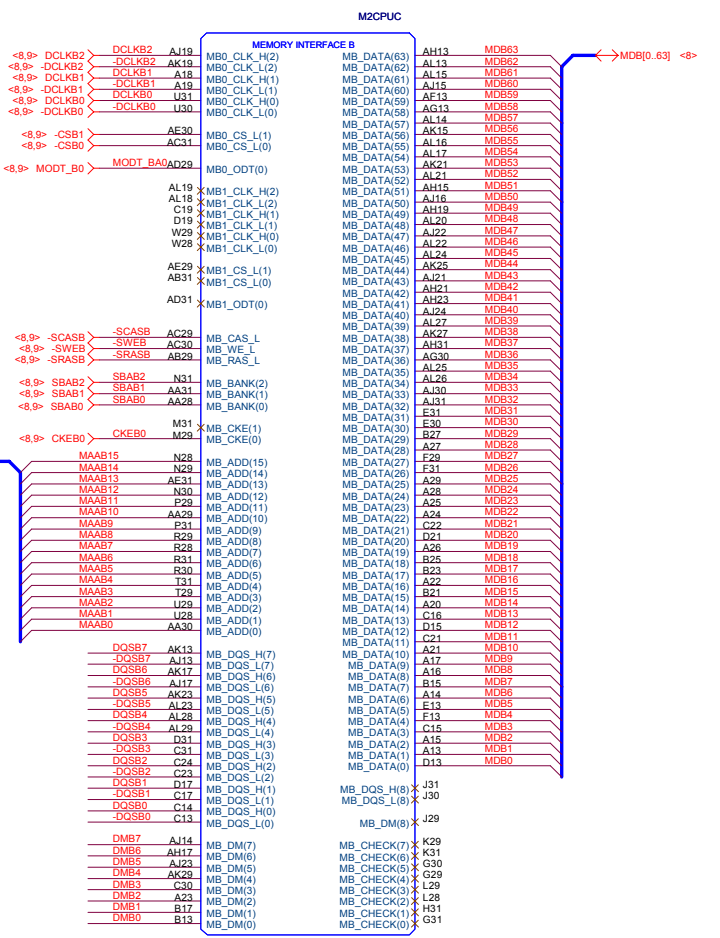
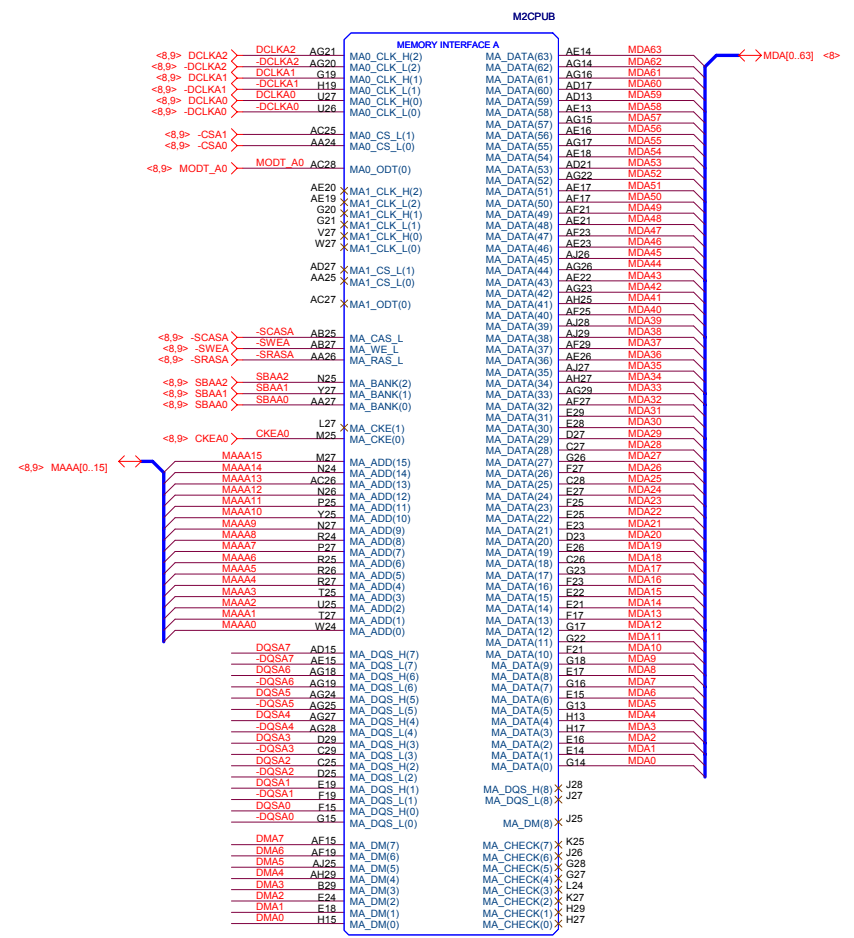
L0_CADIN_L10..15 <L0_CADIN_L10..15> <11>
L0_CADIN_H10..15 <L0_CADIN_H10..15> <11>
L0_CLKIN_L10..11 <L0_CLKIN_L10..11> <11>
L0_CLKIN_H10..11 <L0_CLKIN_H10..11> <11>
L0_CADOUT_L10..15 <L0_CADOUT_L10..15> <11>
L0_CADOUT_H10..15 <L0_CADOUT_H10..15> <11>
L0_CLKOUT_L10..11 <L0_CLKOUT_L10..11> <11>
L0_CLKOUT_H10..11 <L0_CLKOUT_H10..11> <11>

CPU_VDD_RUN = VCORE
CPU_VDDA_RUN = VDDA25
VLDT_RUN = VCC12_HT
CPU_VDDIO_SUS = DDR18V
CPU_VTT_SUS = DDRVTT

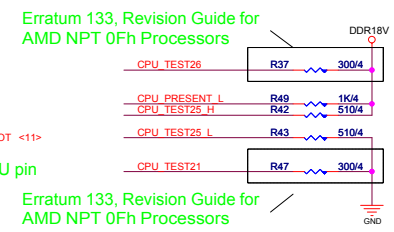
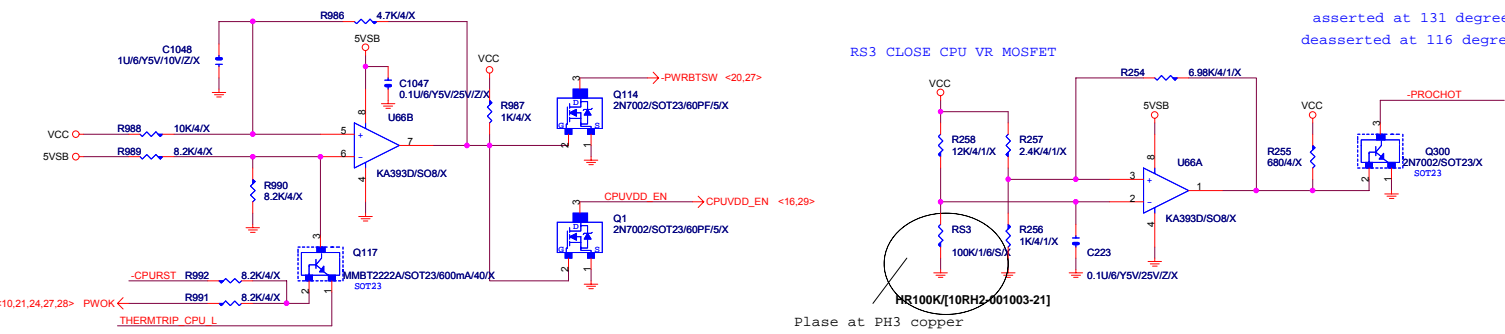
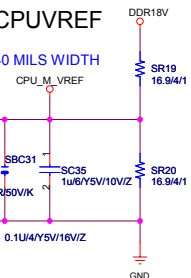
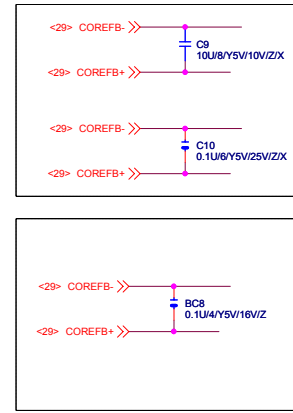
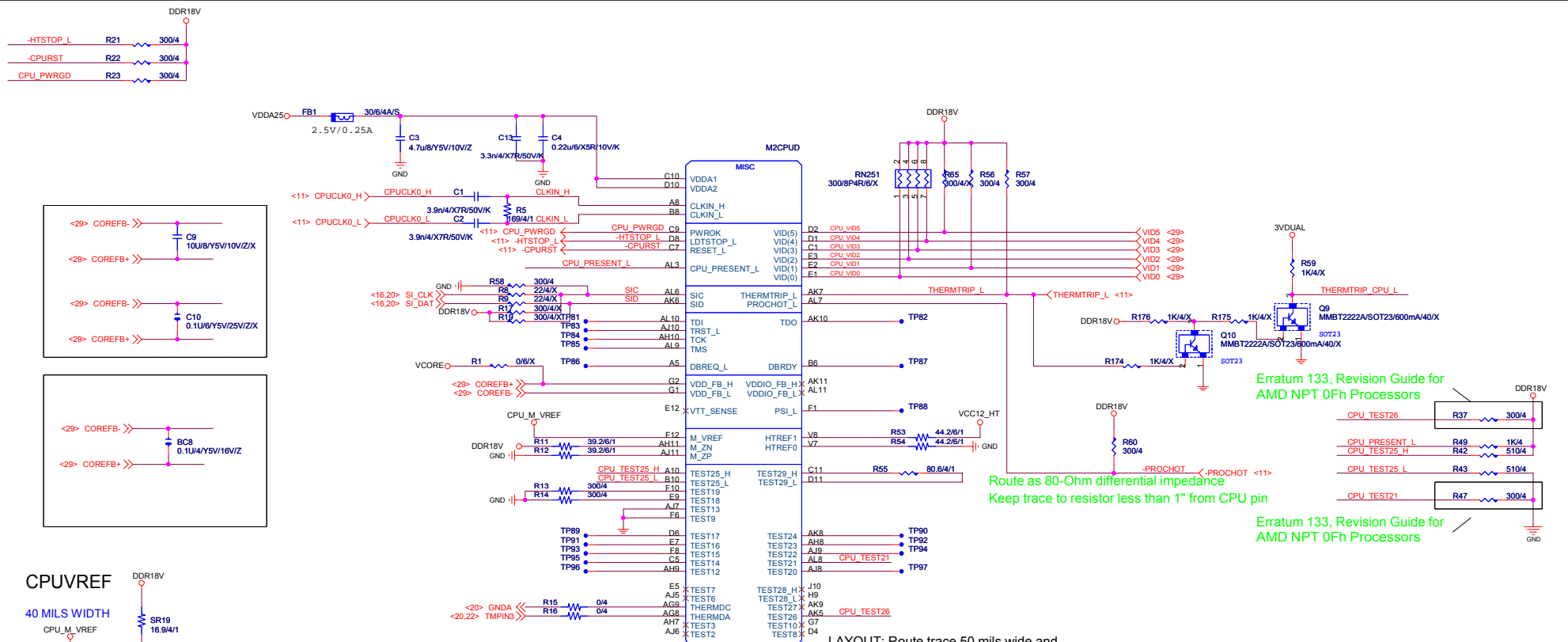
VLDT_A = VCC12_HT
VLDT_B = HT12B



GIGABYTE			
CPU HYPER TRANSPORT			
Title	Document Number		Rev
Size	Custom	GA-M61VME-S2	1.02
Date:	Thursday, September 14, 2006	Sheet 4	of 30



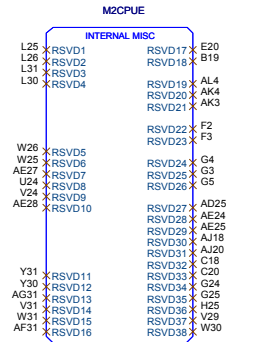
GIGABYTE			
CPU DDRII MEMORY			
Title			
Size	Document Number	Rev	
Custom	GA-M61VME-S2		1.02
Date:	Thursday, September 14, 2006	Sheet	5 of 30



LAYOUT: Route trace 50 mils wide and 500 to 750 mils long between these caps.

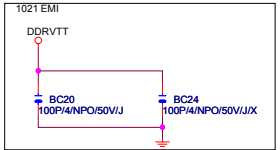
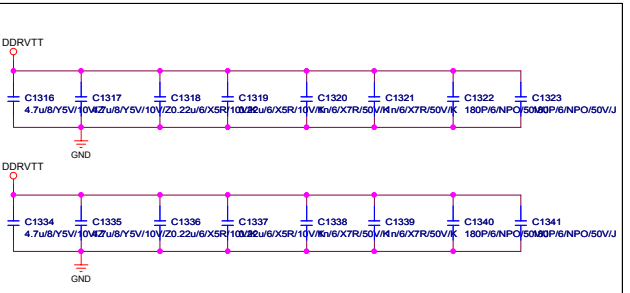
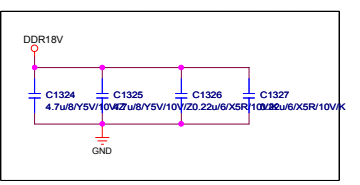
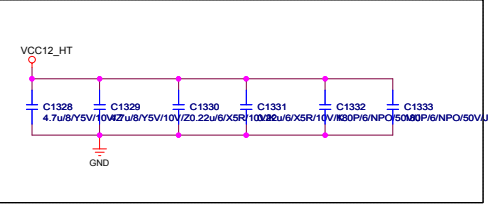
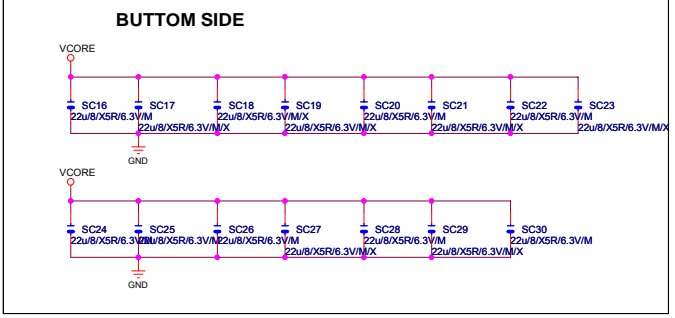
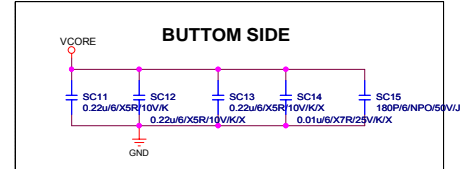
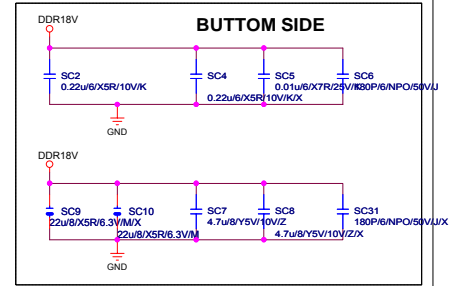
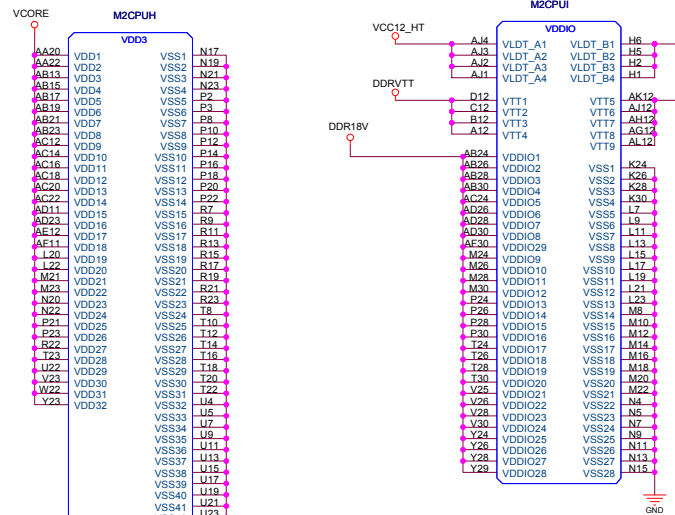
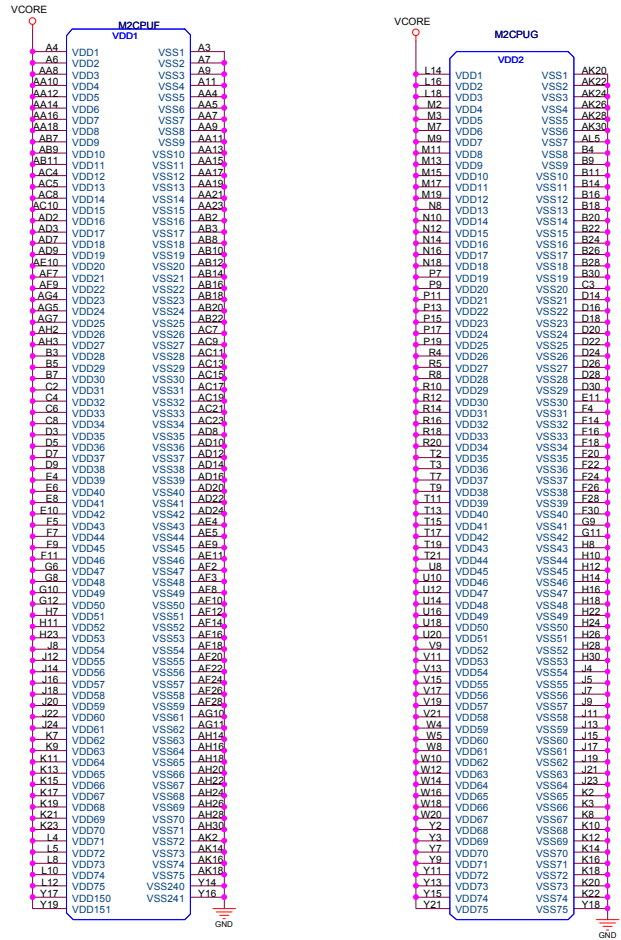
asserted at 131 degree
deasserted at 116 degree

Place at PH3 copper

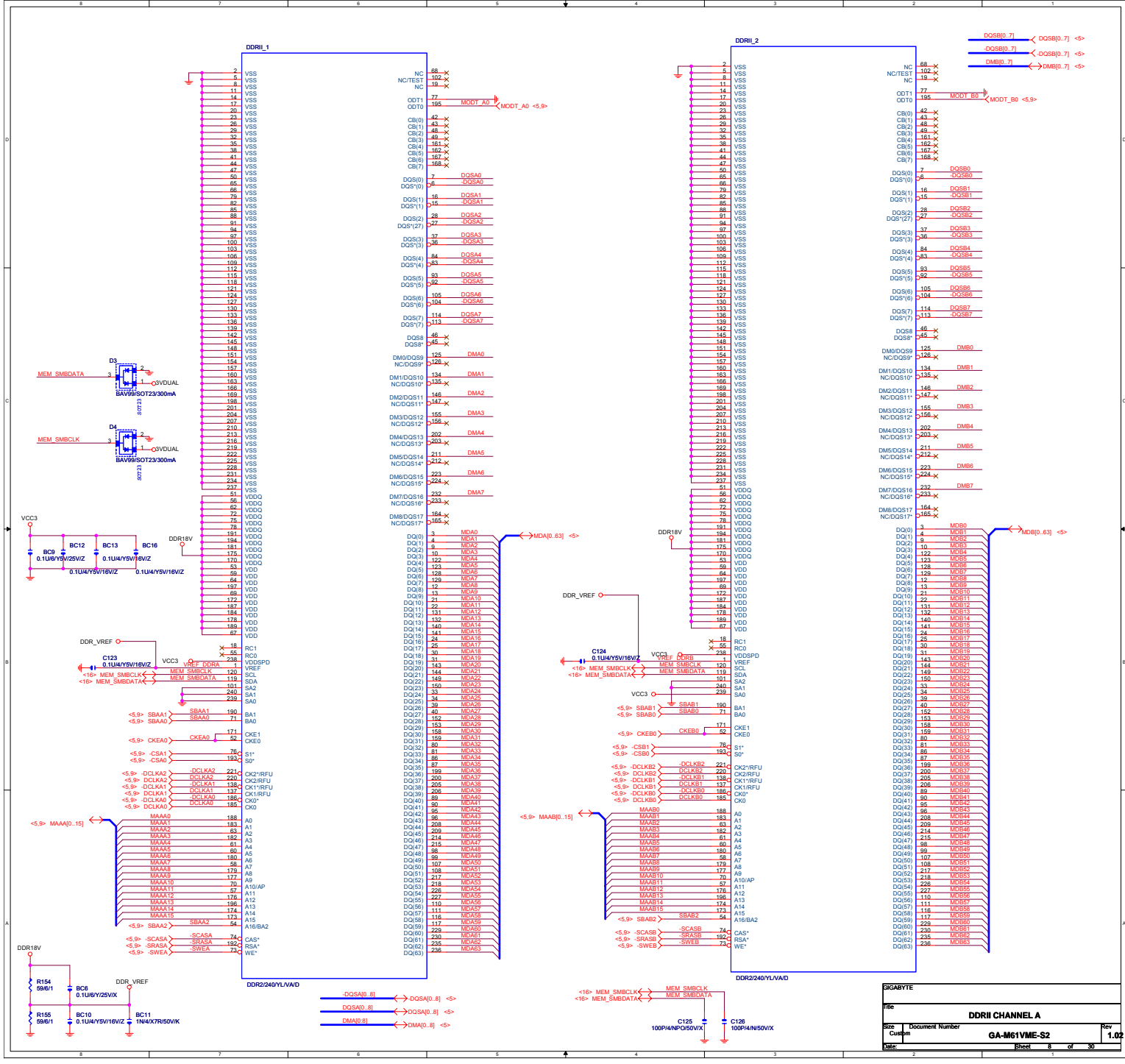


GIGABYTE			
Title			
CPU CONTROL			
Size	Document Number	Rev	
Custom	GA-M61VME-S2	1.02	
Date:	Thursday, September 14, 2006	Sheet	6 of 30

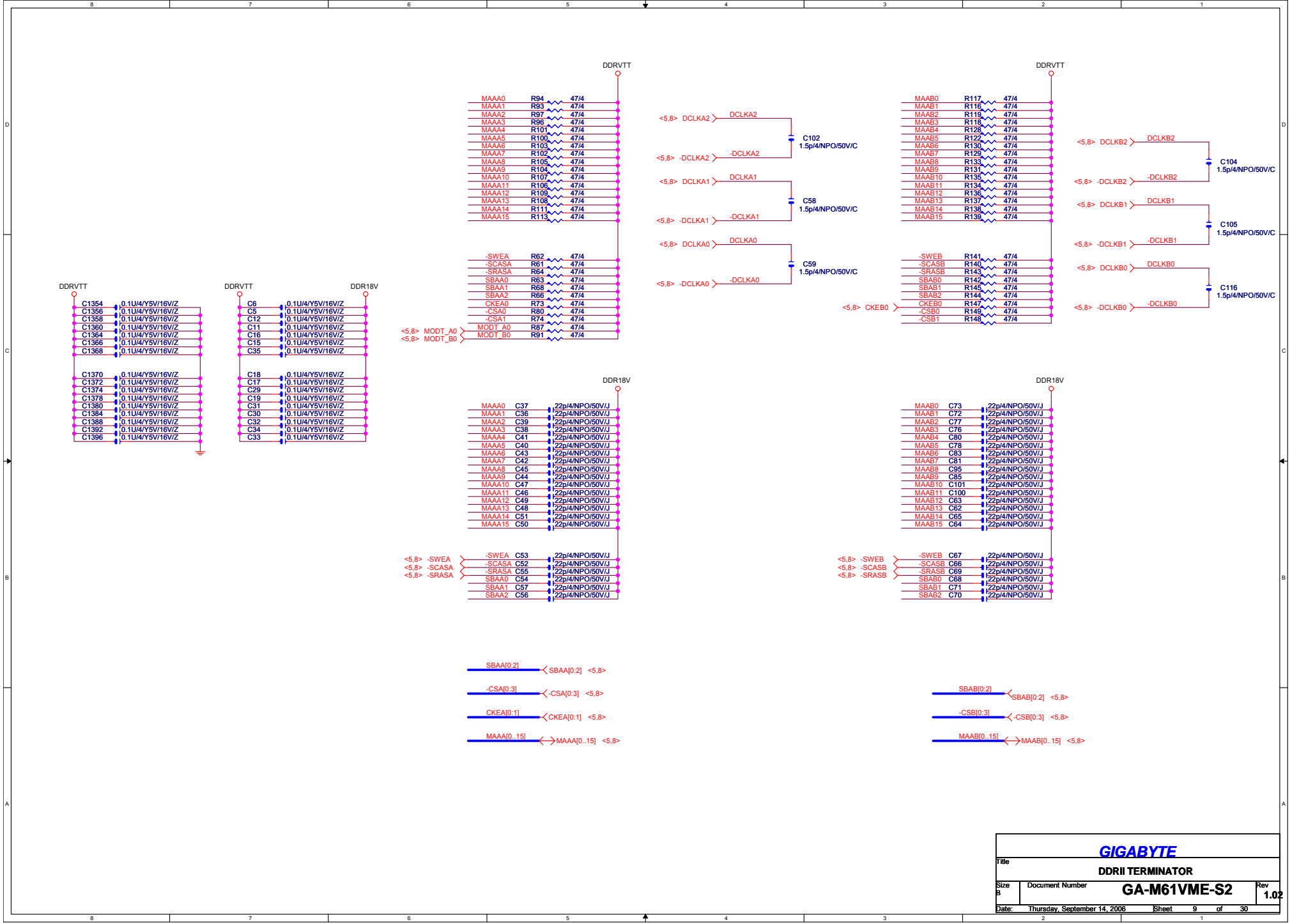
VLDT_RUN_B is connected to the VLDT_RUN power supply through the package or on the die. It is only connected on the board to decoupling near the CPU package.



GIGABYTE			
CPU POWER & GND			
Title	CPU POWER & GND		
Size	Document Number	Rev	
Custom	GA-M61VME-S2		1.02
Date:	Thursday, September 14, 2006	Sheet	7 of 30

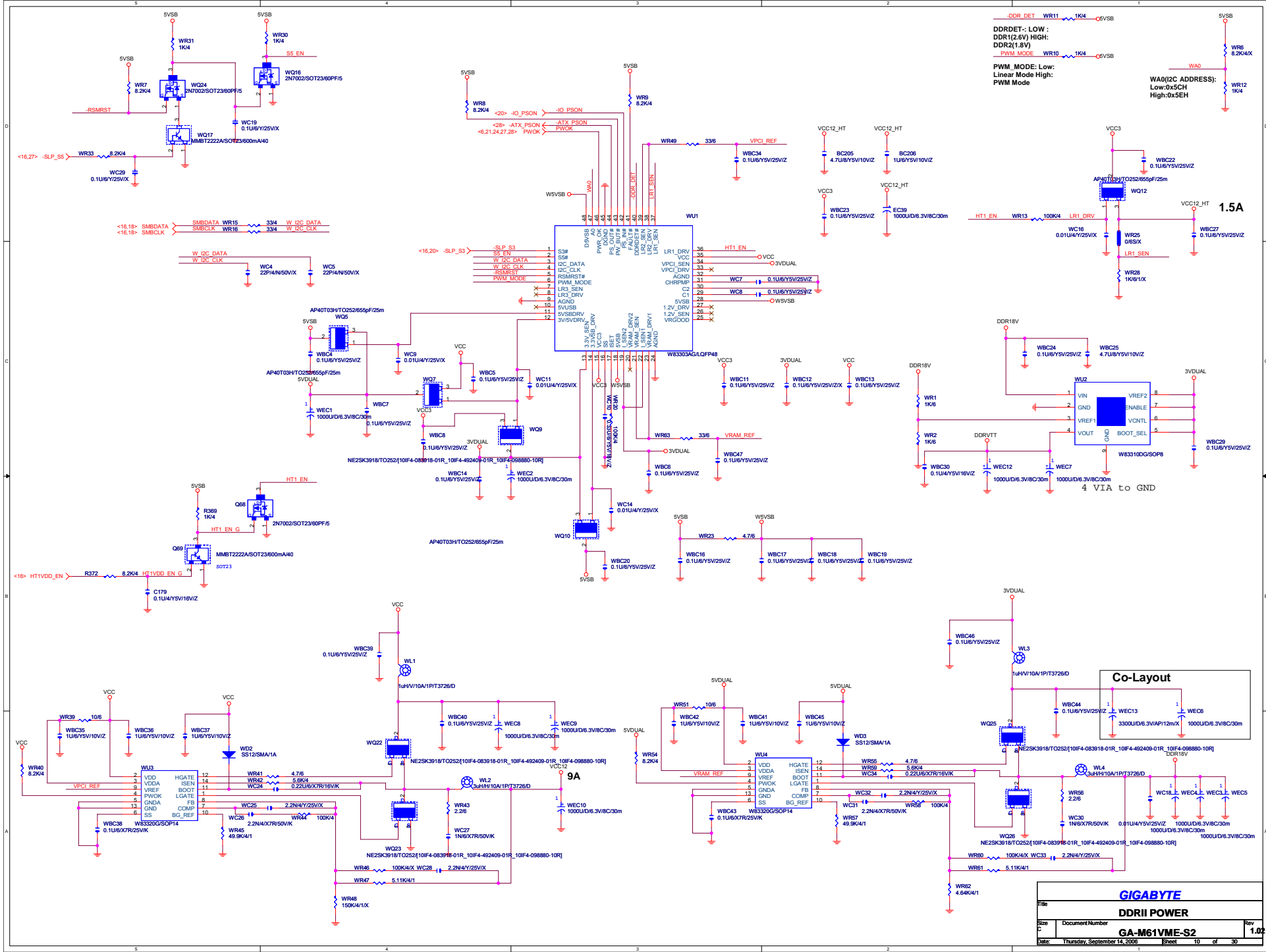


File	Document Number	Rev
DDR1 CHANNEL A	GA-M61VME-S2	1.02
Size	Sheet 8 of 30	



GIGABYTE

Title			
DDRII TERMINATOR			
Size	Document Number	Rev	
B	GA-M61VME-S2	1.02	
Date:	Thursday, September 14, 2006	Sheet	9 of 30



DDRDET- LOW: $1K4$ C5VSB
 DDR1(2.5V) HIGH: $1K4$ C5VSB
 DDR2(1.8V)
 PWM_MODE- Low: $1K4$ C5VSB
 Linear Mode High: $1K4$ C5VSB
 PWM Mode
 WQ16 2N7002/SOT23/60PF/5
 WQ17 MMBT2222A/SOT23/600mA/40
 WQ18 2N7002/SOT23/60PF/5
 WQ19 0.1uF/Y25V/X
 WQ20 0.1uF/Y25V/X
 WQ21 0.1uF/Y25V/X
 WQ22 3uH/H10A/1P/3726/D
 WQ23 NE2SK3918/TQ252/10IF4-083918-01R_10IF4-492409-01R_10IF4-088880-10R
 WQ24 FN7002/SOT23/60PF/5
 WQ25 3uH/H10A/1P/3726/D
 WQ26 NE2SK3918/TQ252/10IF4-083918-01R_10IF4-492409-01R_10IF4-088880-10R
 WQ27 1N6X7R50V/K
 WQ28 2.2N4/Y/25V/X
 WQ29 0.1uF/Y5V/25V/Z
 WQ30 1000u/D/6.3V/8C/30m
 WQ31 1000u/D/6.3V/8C/30m
 WQ32 1000u/D/6.3V/8C/30m
 WQ33 1000u/D/6.3V/8C/30m
 WQ34 1000u/D/6.3V/8C/30m
 WQ35 1000u/D/6.3V/8C/30m
 WQ36 1000u/D/6.3V/8C/30m
 WQ37 1000u/D/6.3V/8C/30m
 WQ38 1000u/D/6.3V/8C/30m
 WQ39 1000u/D/6.3V/8C/30m
 WQ40 1000u/D/6.3V/8C/30m

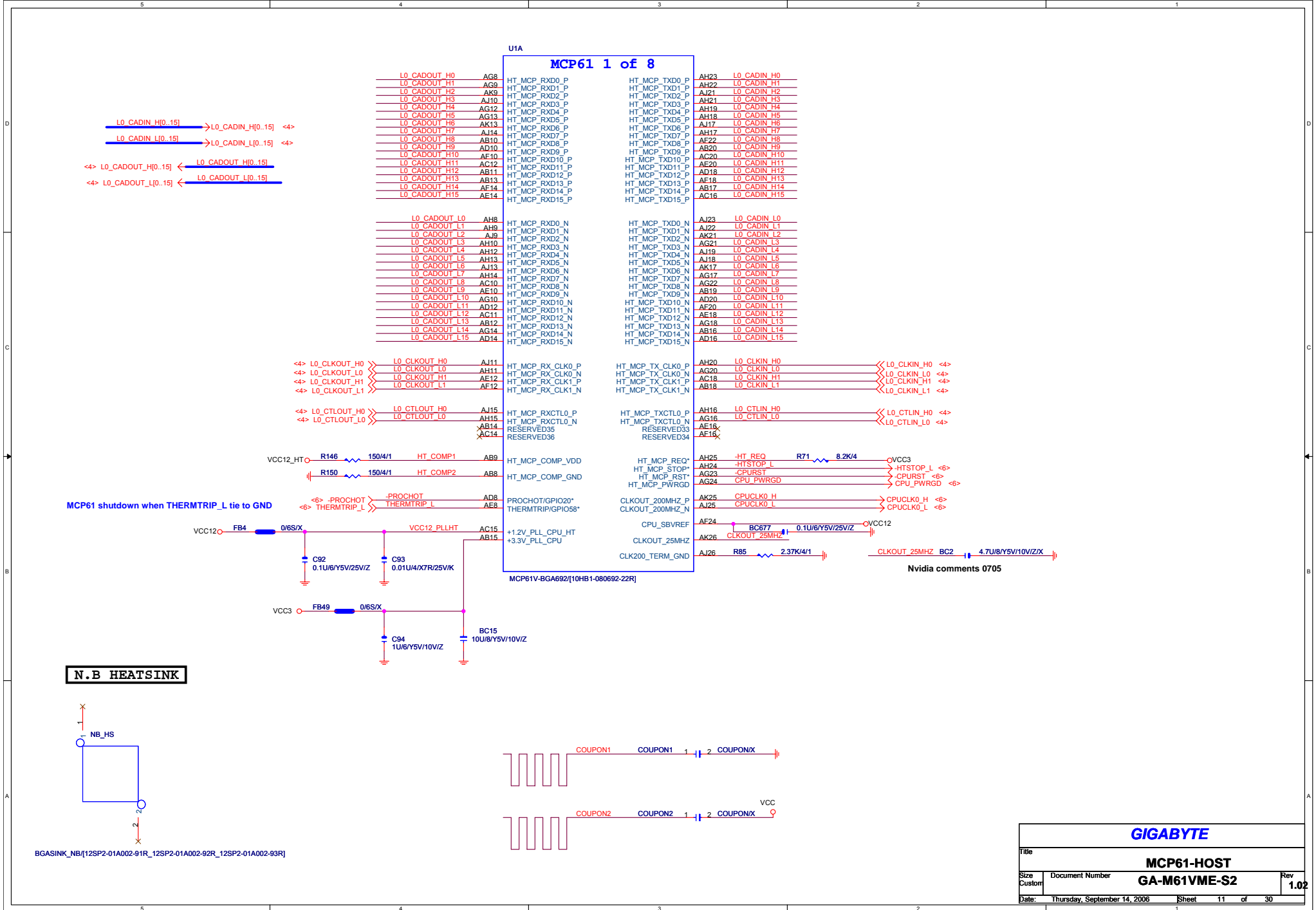
WU1 W83303AG/LQP/48
 D+VSB 48
 D-VSB 47
 PWR_AU 46
 PWR_AD 45
 PWR_D 44
 PWR_B 43
 PWR_A 42
 PWR 41
 PWR 40
 PWR 39
 PWR 38
 PWR 37
 PWR 36
 PWR 35
 PWR 34
 PWR 33
 PWR 32
 PWR 31
 PWR 30
 PWR 29
 PWR 28
 PWR 27
 PWR 26
 PWR 25
 PWR 24
 PWR 23
 PWR 22
 PWR 21
 PWR 20
 PWR 19
 PWR 18
 PWR 17
 PWR 16
 PWR 15
 PWR 14
 PWR 13
 PWR 12
 PWR 11
 PWR 10
 PWR 9
 PWR 8
 PWR 7
 PWR 6
 PWR 5
 PWR 4
 PWR 3
 PWR 2
 PWR 1
 PWR 0
 PWR -1
 PWR -2
 PWR -3
 PWR -4
 PWR -5
 PWR -6
 PWR -7
 PWR -8
 PWR -9
 PWR -10
 PWR -11
 PWR -12
 PWR -13
 PWR -14
 PWR -15
 PWR -16
 PWR -17
 PWR -18
 PWR -19
 PWR -20
 PWR -21
 PWR -22
 PWR -23
 PWR -24
 PWR -25
 PWR -26
 PWR -27
 PWR -28
 PWR -29
 PWR -30
 PWR -31
 PWR -32
 PWR -33
 PWR -34
 PWR -35
 PWR -36
 PWR -37
 PWR -38
 PWR -39
 PWR -40
 PWR -41
 PWR -42
 PWR -43
 PWR -44
 PWR -45
 PWR -46
 PWR -47
 PWR -48
 PWR -49
 PWR -50
 PWR -51
 PWR -52
 PWR -53
 PWR -54
 PWR -55
 PWR -56
 PWR -57
 PWR -58
 PWR -59
 PWR -60
 PWR -61
 PWR -62
 PWR -63
 PWR -64
 PWR -65
 PWR -66
 PWR -67
 PWR -68
 PWR -69
 PWR -70
 PWR -71
 PWR -72
 PWR -73
 PWR -74
 PWR -75
 PWR -76
 PWR -77
 PWR -78
 PWR -79
 PWR -80
 PWR -81
 PWR -82
 PWR -83
 PWR -84
 PWR -85
 PWR -86
 PWR -87
 PWR -88
 PWR -89
 PWR -90
 PWR -91
 PWR -92
 PWR -93
 PWR -94
 PWR -95
 PWR -96
 PWR -97
 PWR -98
 PWR -99
 PWR -100

WU2 W8330G/SOP/8
 VIN 1
 VREF2 2
 GND 3
 VREF1 4
 VOUT 5
 GND 6
 BOOT_SEL 7
 VREF 8
 WU3 W8330G/SOP/8
 VIN 1
 VREF2 2
 GND 3
 VREF1 4
 VOUT 5
 GND 6
 BOOT_SEL 7
 VREF 8
 WU4 W8330G/SOP/8
 VIN 1
 VREF2 2
 GND 3
 VREF1 4
 VOUT 5
 GND 6
 BOOT_SEL 7
 VREF 8

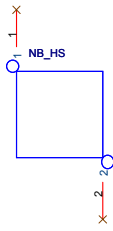
WU5 W8330G/SOP/8
 VIN 1
 VREF2 2
 GND 3
 VREF1 4
 VOUT 5
 GND 6
 BOOT_SEL 7
 VREF 8
 WU6 W8330G/SOP/8
 VIN 1
 VREF2 2
 GND 3
 VREF1 4
 VOUT 5
 GND 6
 BOOT_SEL 7
 VREF 8

WU7 W8330G/SOP/8
 VIN 1
 VREF2 2
 GND 3
 VREF1 4
 VOUT 5
 GND 6
 BOOT_SEL 7
 VREF 8
 WU8 W8330G/SOP/8
 VIN 1
 VREF2 2
 GND 3
 VREF1 4
 VOUT 5
 GND 6
 BOOT_SEL 7
 VREF 8
 WU9 W8330G/SOP/8
 VIN 1
 VREF2 2
 GND 3
 VREF1 4
 VOUT 5
 GND 6
 BOOT_SEL 7
 VREF 8
 WU10 W8330G/SOP/8
 VIN 1
 VREF2 2
 GND 3
 VREF1 4
 VOUT 5
 GND 6
 BOOT_SEL 7
 VREF 8

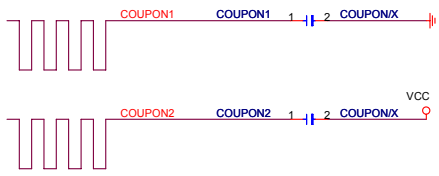
GIGABYTE	
DDRII POWER	
File	DocumentNumber
Size	GA-M61VME-S2
Date	Thursday, September 14, 2006
Sheet	10 of 30
Rev	1.02



N.B HEATSINK

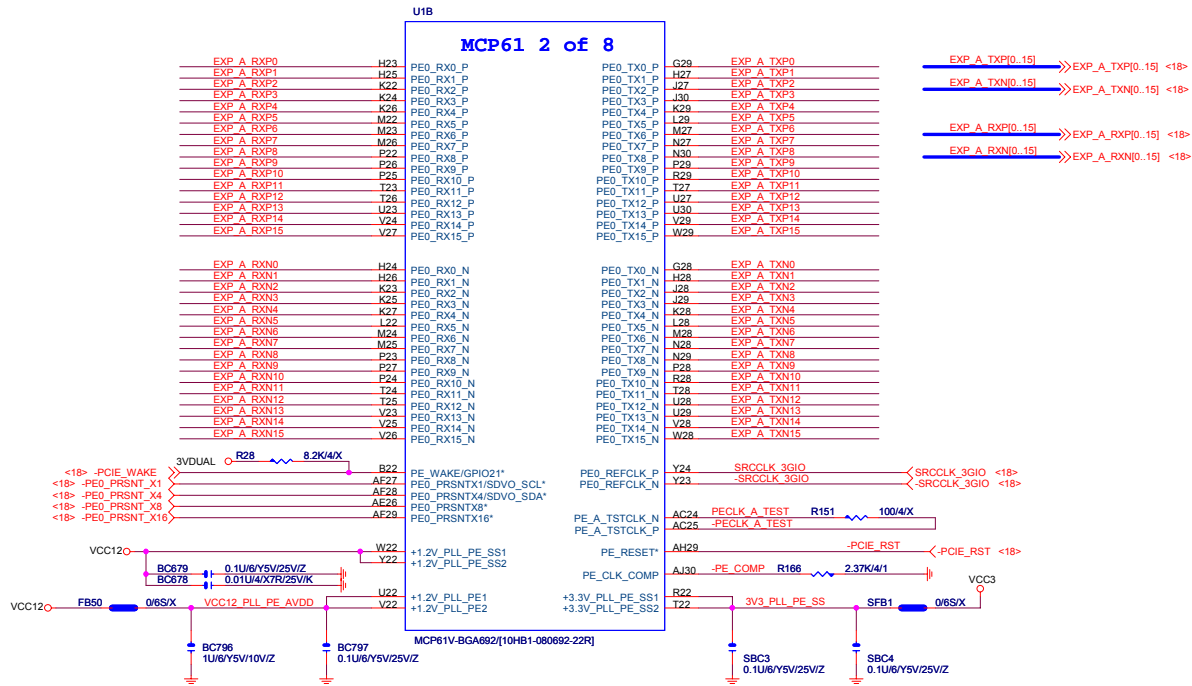


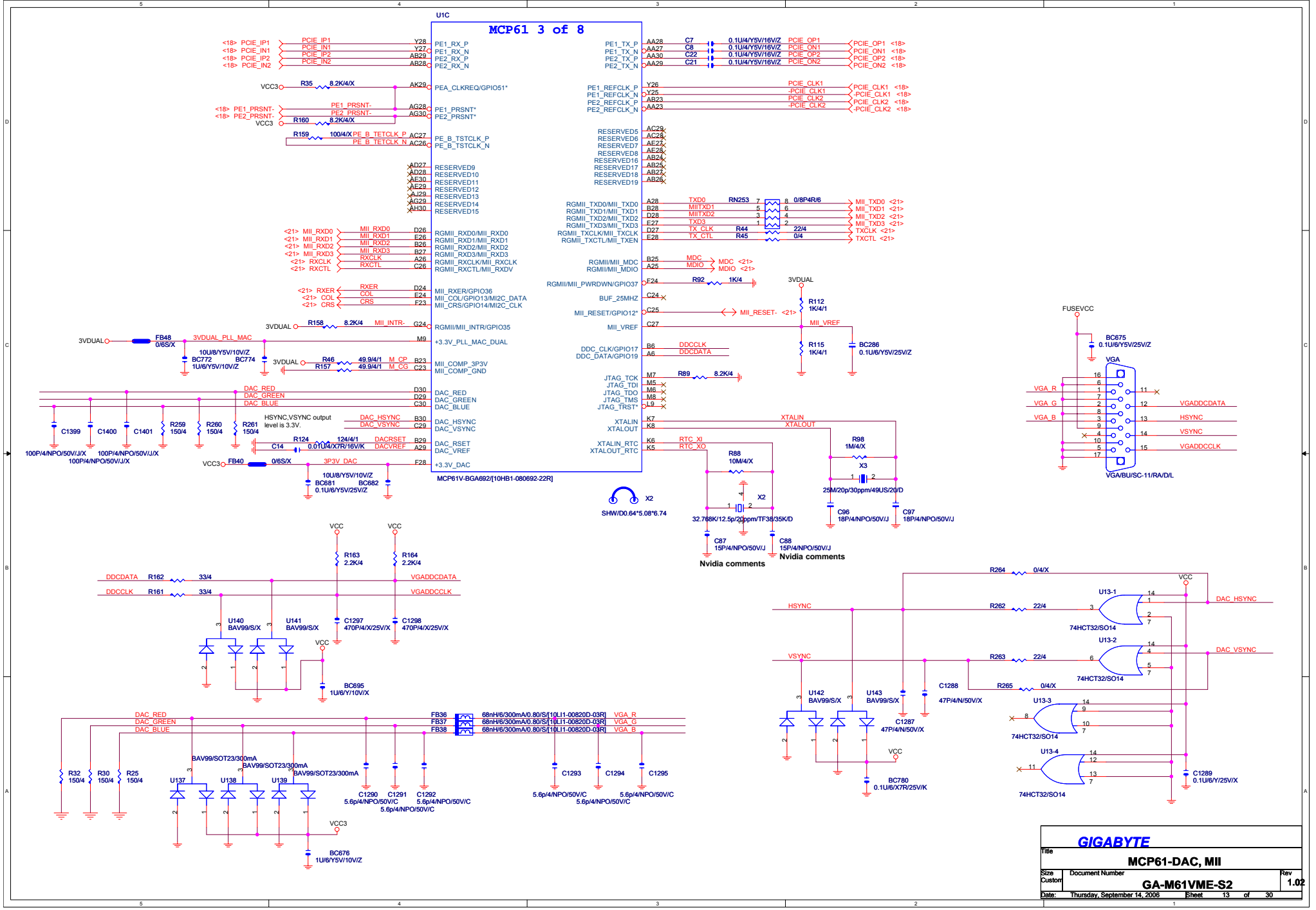
BGASINK_NB[12SP2-01A002-91R_12SP2-01A002-92R_12SP2-01A002-93R]



Nvidia comments 0705

GIGABYTE			
MCP61-HOST			
Size	Document Number	Rev	
Custom	GA-M61VME-S2	1.02	
Date:	Thursday, September 14, 2006	Sheet	11 of 30





GIGABYTE		
MCP61-DAC, MII		
Title	Document Number	Rev
Size	GA-M61VME-S2	1.02
Custom		
Date:	Thursday, September 14, 2006	Sheet 13 of 30

<19> ADJ0..31

MCP61 4 of 8

- AD0 D14
- AD1 E14
- AD2 A13
- AD3 C14
- AD4 A14
- AD5 B14
- AD6 C15
- AD7 J16
- AD8 G16
- AD9 F16
- AD10 E16
- AD11 D16
- AD12 D16
- AD13 C16
- AD14 D17
- AD15 C17
- AD16 J19
- AD17 J20
- AD18 H20
- AD19 G20
- AD20 F20
- AD21 E20
- AD22 B18
- AD23 C19
- AD24 D20
- AD25 C20
- AD26 D21
- AD27 C21
- AD28 B21
- AD29 H22
- AD30 G22
- AD31 E22

- PCI_AD0
- PCI_AD1
- PCI_AD2
- PCI_REQ2/GPIO40/RS232_DSR*
- PCI_REQ3/GPIO38/RS232_CTS*
- PCI_AD4
- PCI_AD5
- PCI_AD6
- PCI_AD7
- PCI_AD8
- PCI_AD9
- PCI_AD10
- PCI_AD11
- PCI_AD12
- PCI_AD13
- PCI_AD14
- PCI_AD15
- PCI_AD16
- PCI_AD17
- PCI_AD18
- PCI_AD19
- PCI_AD20
- PCI_AD21
- PCI_AD22
- PCI_AD23
- PCI_AD24
- PCI_AD25
- PCI_AD26
- PCI_AD27
- PCI_AD28
- PCI_AD29
- PCI_AD30
- PCI_AD31

- <19> -C_BE0
- <19> -C_BE1
- <19> -C_BE2
- <19> -C_BE3

- PCI_CBE0*
- PCI_CBE1*
- PCI_CBE2*
- PCI_CBE3*

- <19> -FRAME
- <19> -IRDY
- <19> -TRDY
- <19> -STOP
- <19> -DEVSEL
- <19> -PERR
- <19> -SERR
- <19> -PCIPME

- PCI_FRAME*
- PCI_IRDY*
- PCI_TRDY*
- PCI_STOP*
- PCI_DEVSEL*
- PCI_PERR*
- PCI_SERR*
- PCI_PME/GPIO30*

- <19> -PPCIRST
- <23> -IDERST
- <20> -LPCRST
- <28> -BIOSRST

- PCI_RESET0*
- PCI_RESET1*
- PCI_RESET2*
- PCI_RESET3*
- LPC_RESET*

MCP61V-BGA692[10HB1-080692-22R]

- G12 -REQ0
- A10 -REQ1
- C11 -REQ2
- H14 -REQ3
- D13 -REQ4

- GNT4 R152 8.2K/4 VCC3
- REQ4 R81 8.2K/4 VCC3
- SERIRO R75 8.2K/4 VCC3
- LDRQ0 R77 8.2K/4 VCC3
- PCIPME R78 8.2K/4 3VDUAL

- A9 -GNT0
- C10 -GNT1
- B10 -GNT2
- J14 -GNT3
- C12 -GNT4

- PCICLK1 C74 10P/4/N/50V/X
- PCICLK2 C75 10P/4/N/50V/X
- ROMCLK33 C82 10P/4/N/50V/X
- LPC33 C84 10P/4/N/50V/X
- PCICLK_FB BC217 100P/4/N/50V/X

- C22 -INTA
- D22 -INTB
- A22 -INTC
- A21 -INTD

- B13 PCLK0 R67 22/4 PCICLK1
- E14 PCLK1 R69 22/4 PCICLK2
- D12 PCLK2
- E12 PCLK4 R227 22/4
- H12 PCLK_FB

- LPC_AD0 G10 LAD0
- LPC_AD1 F10 LAD1
- LPC_AD2 D10 LAD2
- LPC_AD3 E10 LAD3

- C8 -TP LPC_PWRDWN 1 TP15
- H10 -LFRAME
- C9 -LDRQ0
- B9 -LDRQ1
- J10 SERIRO

- <16,25> ACZ_SDOUT ACZ_SDOUT R241 15K/4/X VCC3
- LFRAME R40 1K/4

- LPC_CLK0 E8 R84 33/4 LPC33
- LPC_CLK1 D8 R86 22/4 ROMCLK33

BIOS STRAP:

- ACZ_SDOUT
- LFRAME

0 0 = LPC BIOS
 0 1 = PCI BIOS
 1 0 = SPI BIOS(Default)
 1 1 = RESERVED

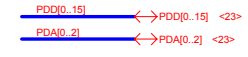
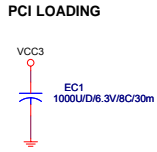
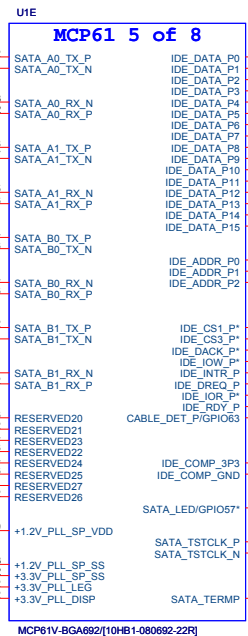
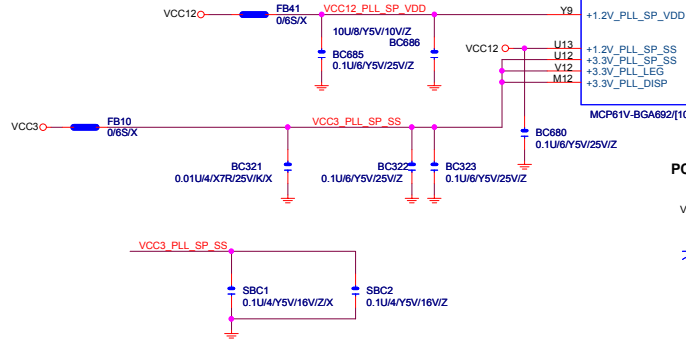
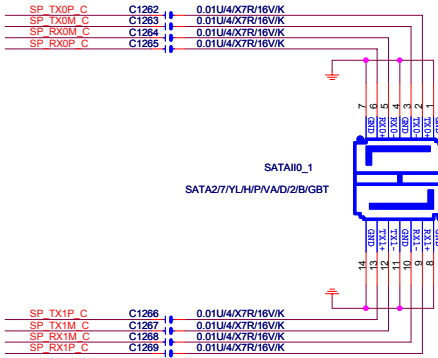
0.1 use LPC BIOS, 0.2 change to SPI BIOS

GIGABYTE

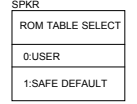
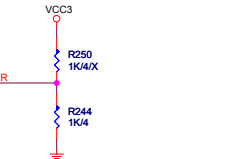
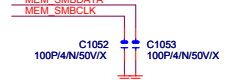
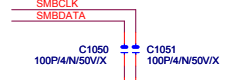
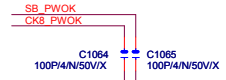
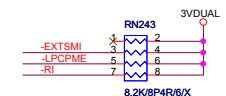
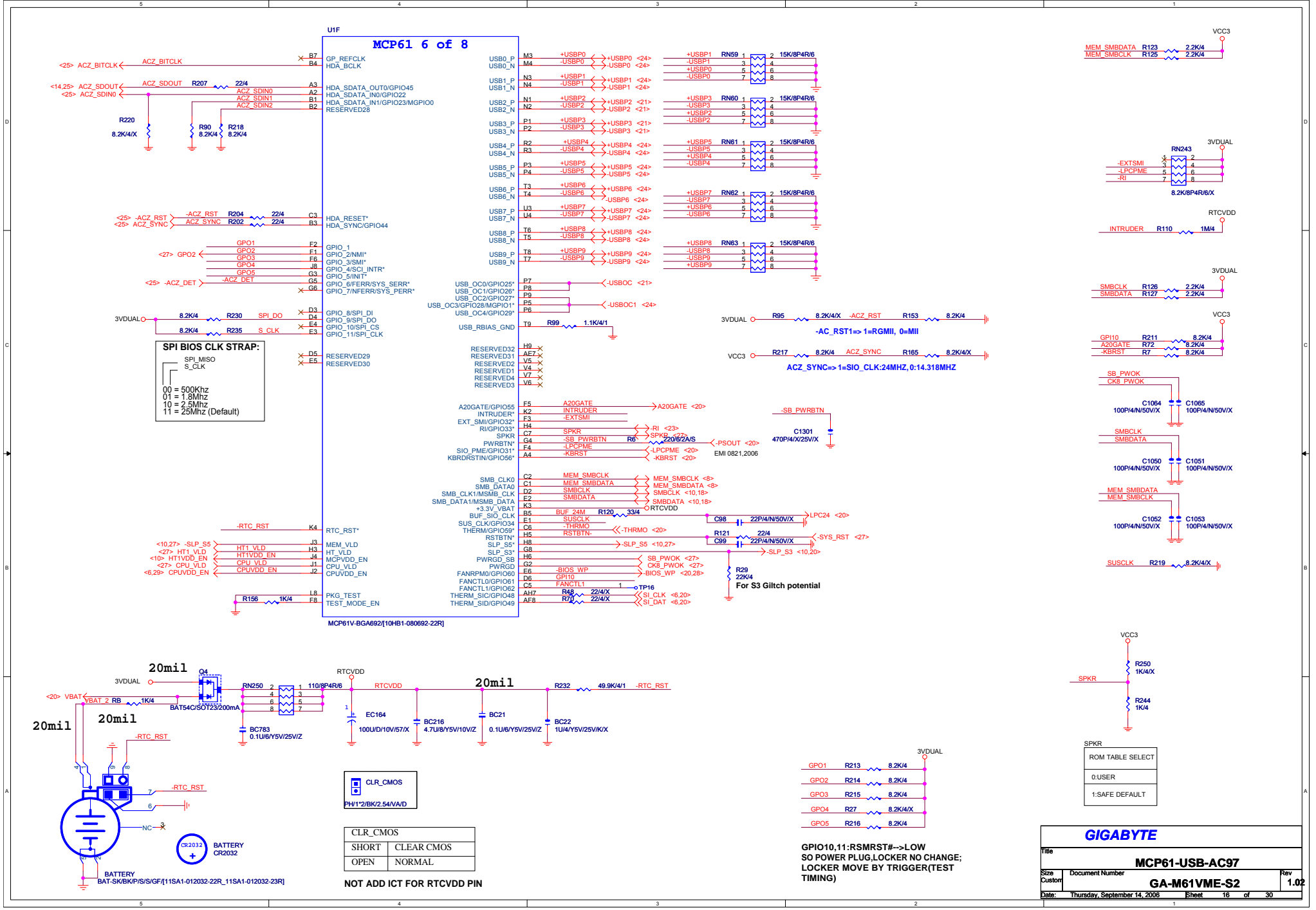
Title: **MCP61-PCI BUS**

Size: Custom Document Number: **GA-M61VME-S2** Rev: **1.02**

Date: Thursday, September 14, 2006 Sheet: 14 of 30



GIGABYTE		
MCP61-SATA/IDE		
Title	Document Number	Rev
	GA-M61VME-S2	1.02
Date:	Thursday, September 14, 2006	Sheet 15 of 30

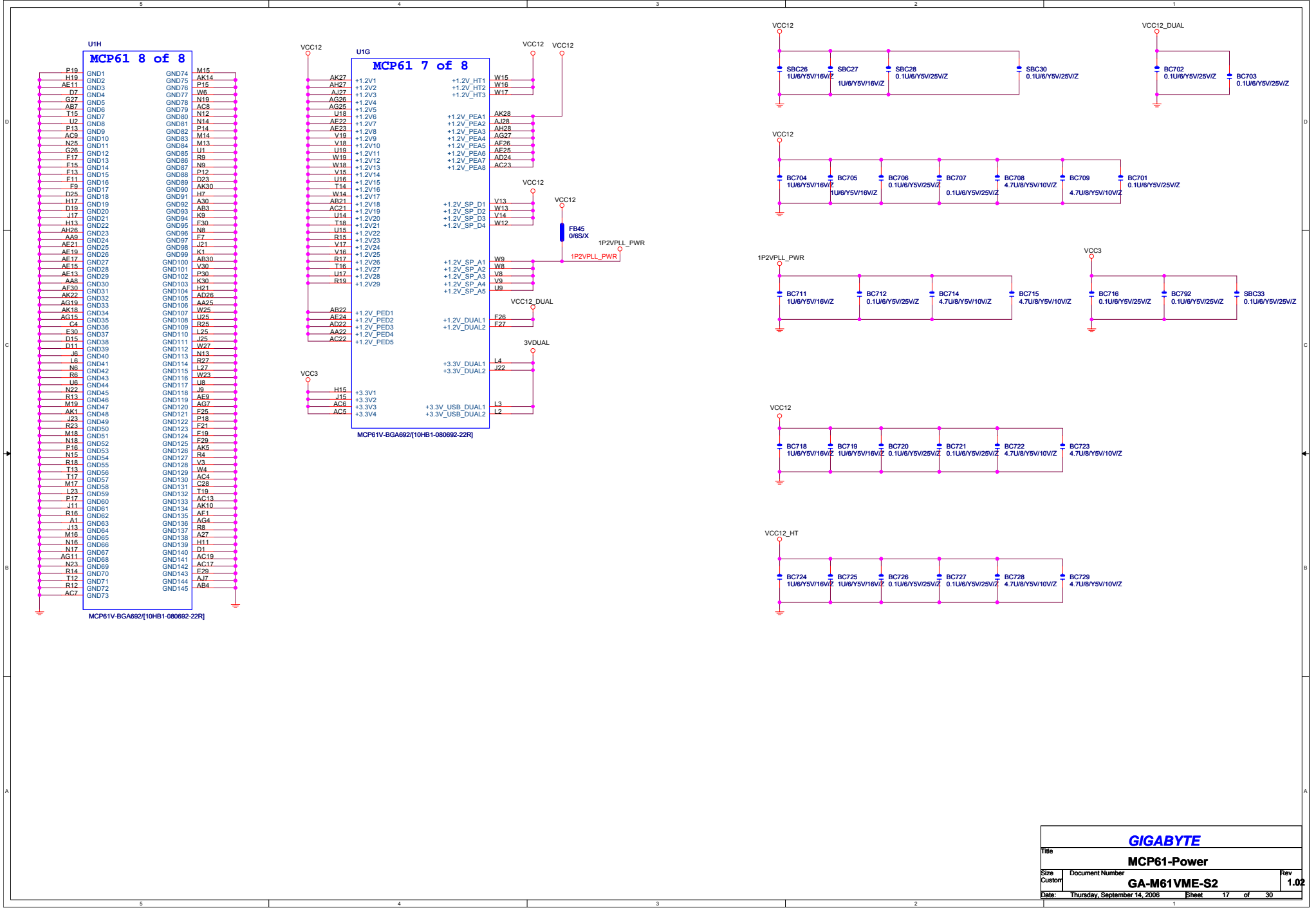


GIGABYTE

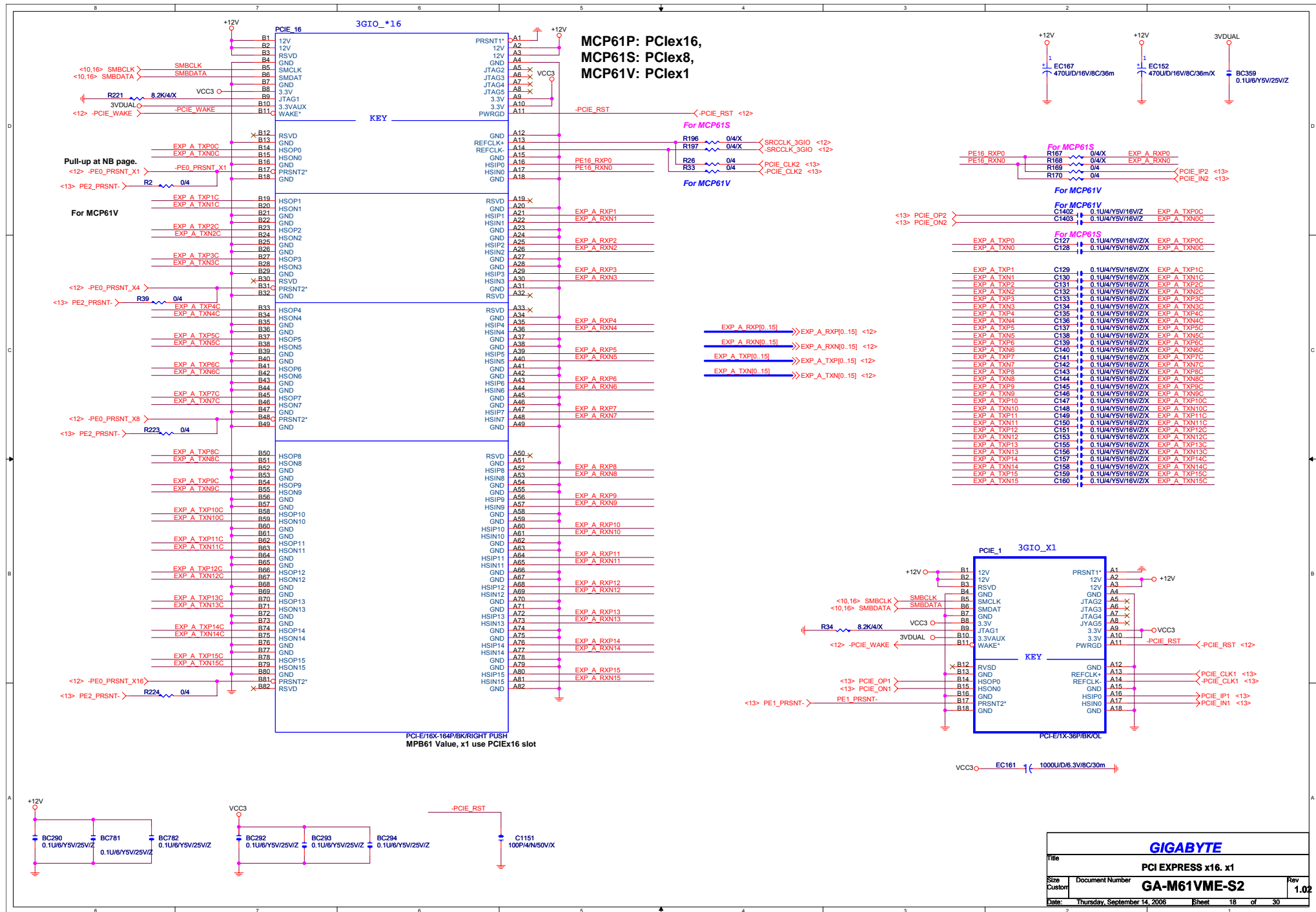
Title: **MCP61-USB-AC97**

Size Custom: Document Number: **GA-M61VME-S2** Rev: **1.02**

Date: Thursday, September 14, 2006 Sheet: 16 of 30



GIGABYTE		
MCP61-Power		
File	Document Number	Rev
Size	GA-M61VME-S2	1.02
Custom		
Date:	Thursday, September 14, 2006	Sheet 17 of 30



GIGABYTE

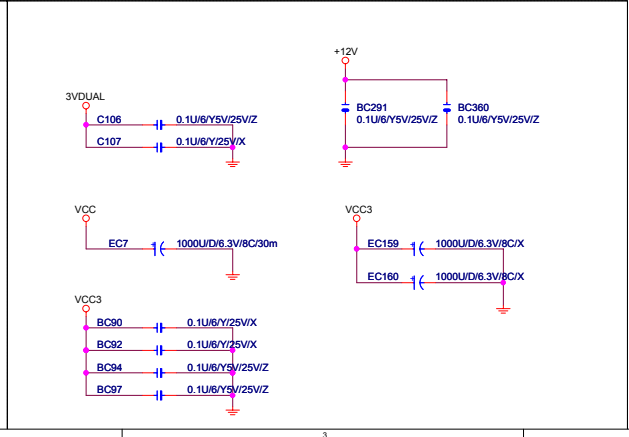
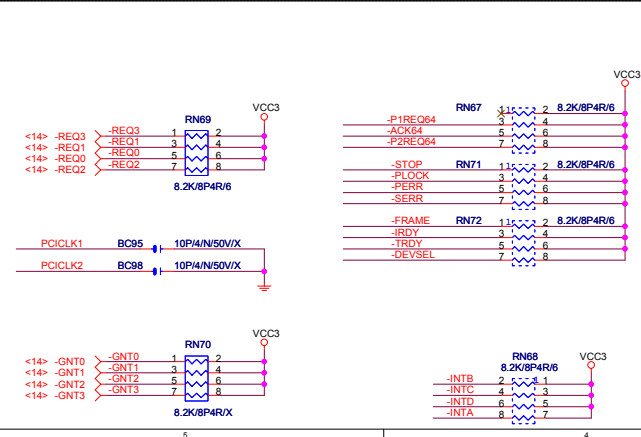
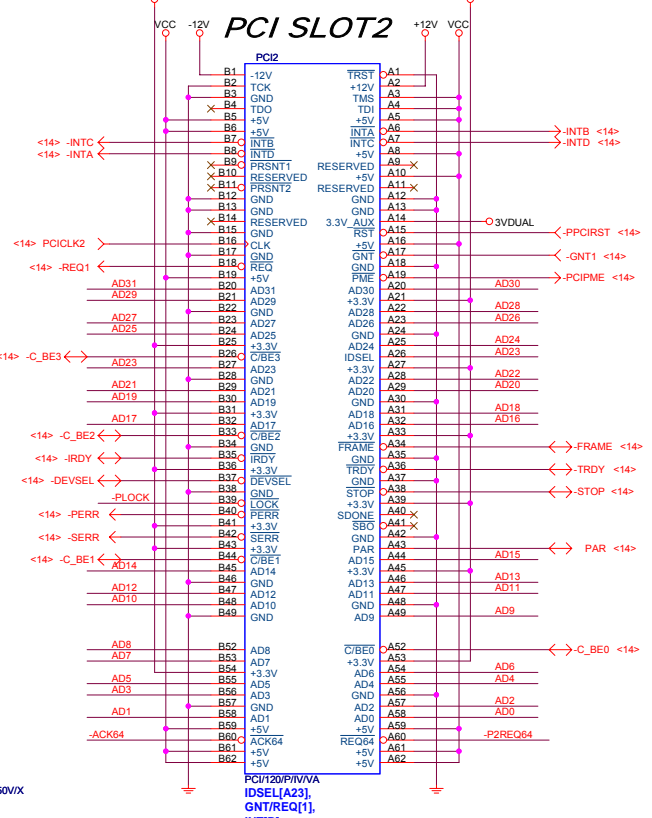
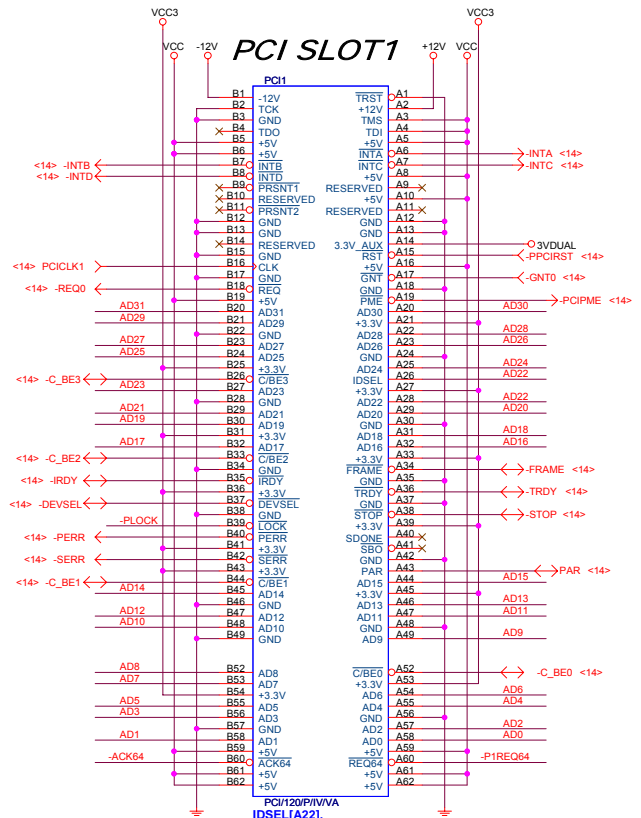
File: **PCI EXPRESS x16. x1**

Size: Custom Document Number: **GA-M61VME-S2** Rev: 1.02

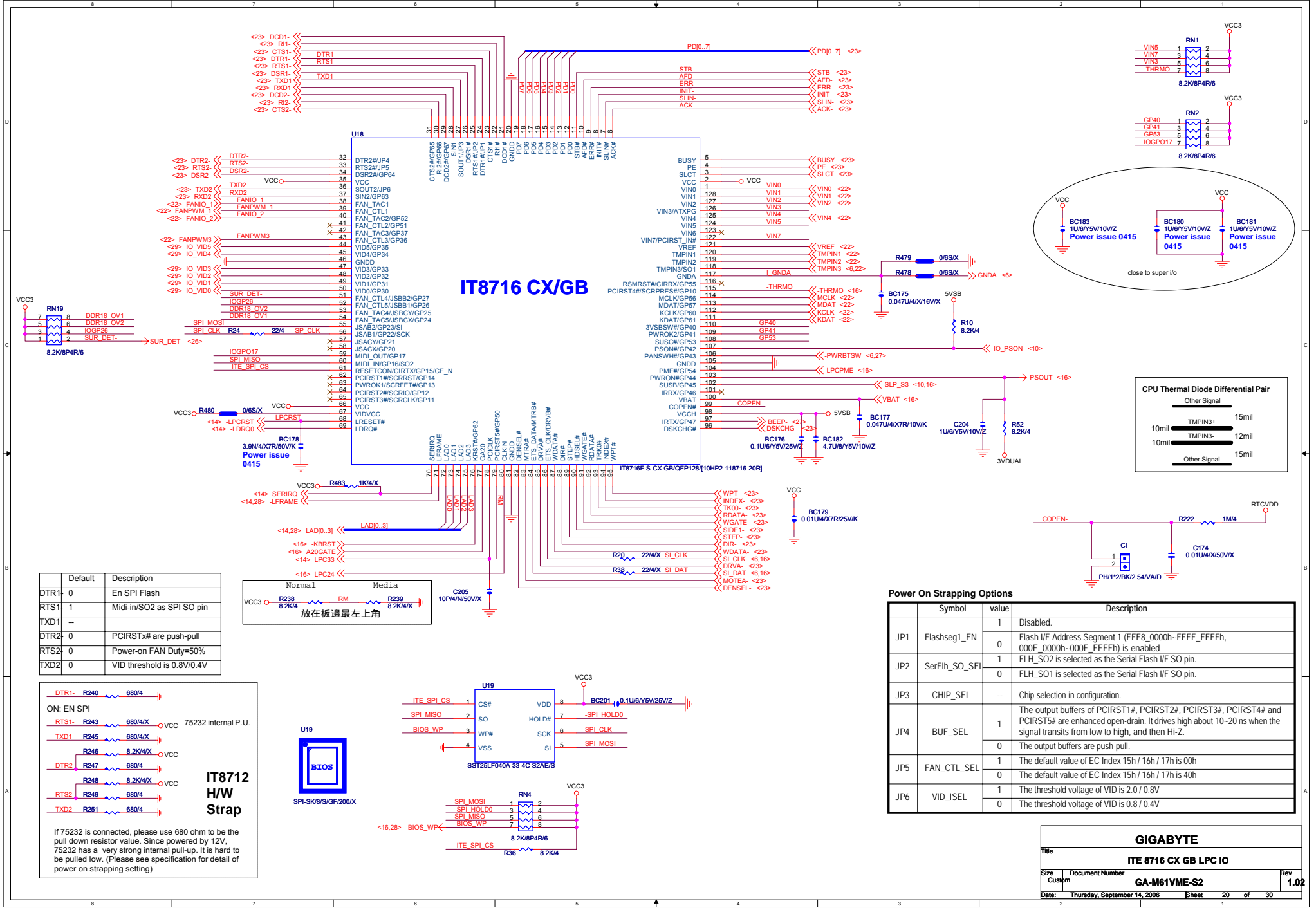
Date: Thursday, September 14, 2006 Sheet: 18 of 30

PCI SLOT 1, 2, 3

<14> AD[0..31] <--> AD[0..31]



GIGABYTE		
PCI SLOT 1,2		
Title	Document Number	Rev
Size Custom	GA-M61VME-S2	1.02
Date: Thursday, September 14, 2006 Sheet 19 of 30		



Default	Description
DTR1- 0	En SPI Flash
RTS1- 1	Mid-in/SO2 as SPI SO pin
TXD1 - --	
DTR2- 0	PCIRSTx# are push-pull
RTS2- 0	Power-on FAN Duty=50%
TXD2 0	VID threshold is 0.8V/0.4V

IT8712 H/W Strap

ON: EN SPI

RTS1- R243 680/4X VCC 75232 internal P.U.

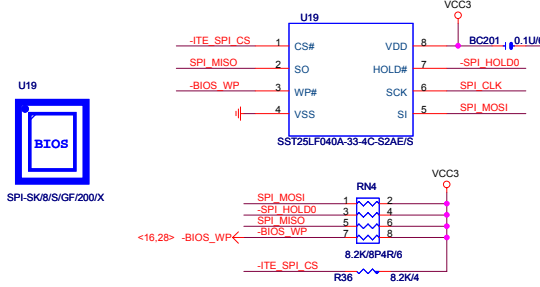
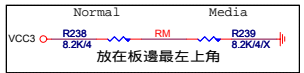
TXD1 R245 680/4X VCC

DTR2- R247 680/4 VCC

RTS2- R249 680/4 VCC

TXD2 R251 680/4 VCC

If 75232 is connected, please use 680 ohm to be the pull down resistor value. Since powered by 12V, 75232 has a very strong internal pull-up. It is hard to be pulled low. (Please see specification for detail of power on strapping setting)



Power On Strapping Options

Symbol	value	Description
JP1	Flashseg1_EN	1 Disabled.
JP2	SerFlh_SO_SEL	0 Flash I/F Address Segment 1 (FFF8_0000h-FFFF_FFFFh, 000E_0000h-000F_FFFFh) is enabled.
JP3	CHIP_SEL	0 FLH_SO2 is selected as the Serial Flash I/F SO pin.
JP4	BUF_SEL	1 The output buffers of PCIRST1#, PCIRST2#, PCIRST3#, PCIRST4# and PCIRST5# are enhanced open-drain. It drives high about 10-20 ns when the signal transits from low to high, and then Hi-Z.
JP5	FAN_CTL_SEL	0 The output buffers are push-pull.
JP6	VID_ISEL	1 The default value of EC Index 15h / 16h / 17h is 00h
		0 The default value of EC Index 15h / 16h / 17h is 40h
		1 The threshold voltage of VID is 2.0 / 0.8V
		0 The threshold voltage of VID is 0.8 / 0.4V

GIGABYTE

ITE 8716 CX GB LPC IO

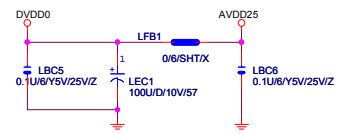
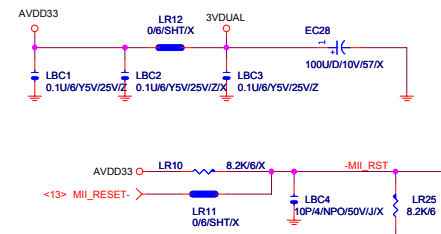
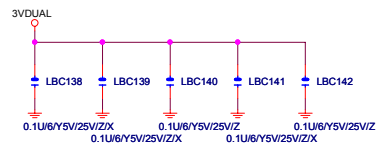
File

Size Custom Document Number

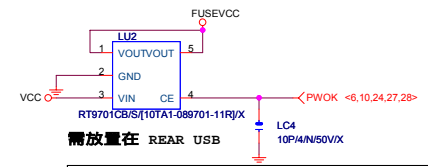
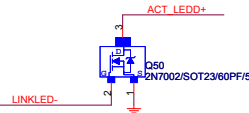
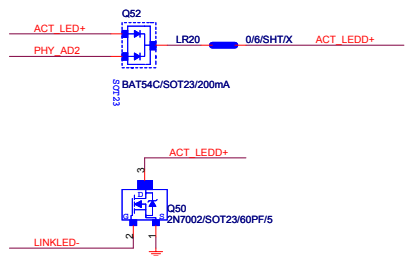
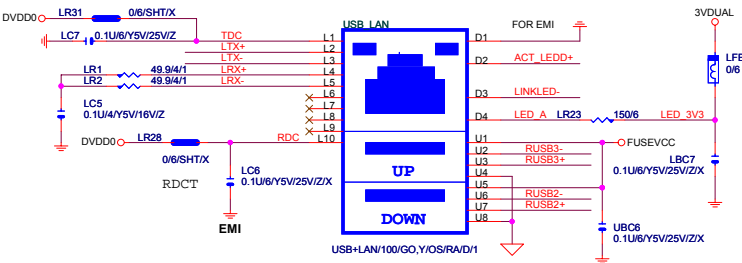
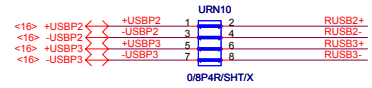
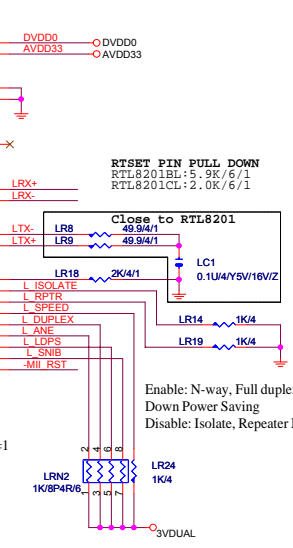
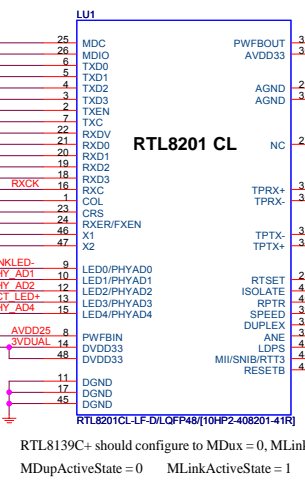
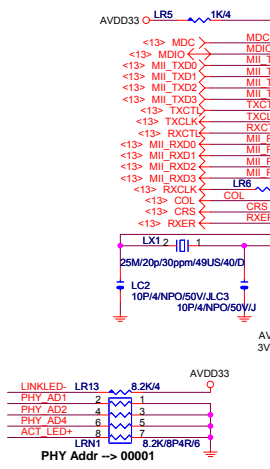
Date: Thursday, September 14, 2006 Sheet 20 of 30

Rev 1.02

GA-M61VME-S2

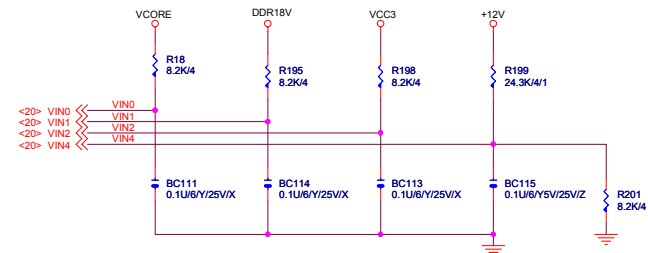
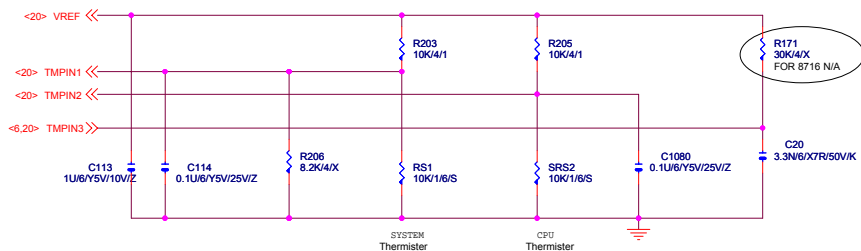


MDIO nvidia recommend pull-up to 3VDUAL.

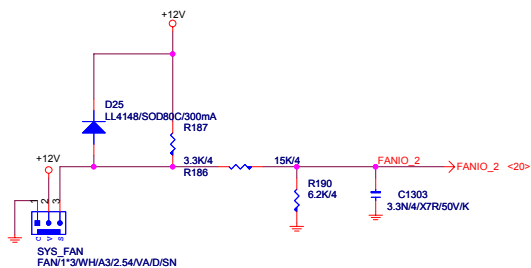


GIGABYTE			
RTL 8201CL			
Title	Document Number	Rev	
	GA-M61VME-S2	1.02	
Date:	Thursday, September 14, 2006	Sheet	21 of 30

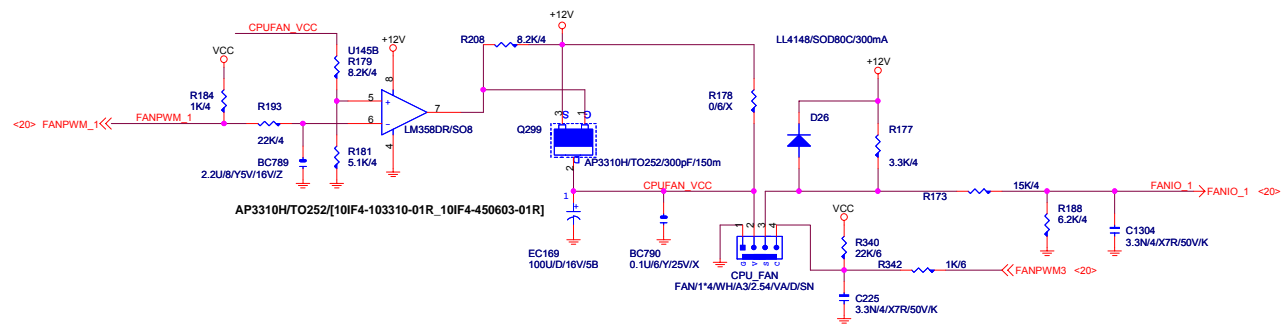
Hardware Monitor circuits



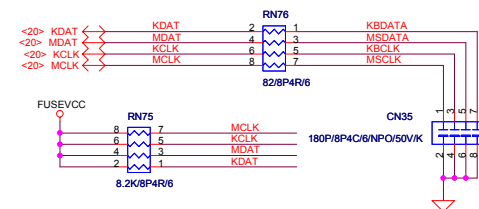
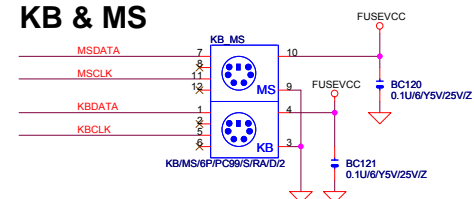
SYSTEM FAN



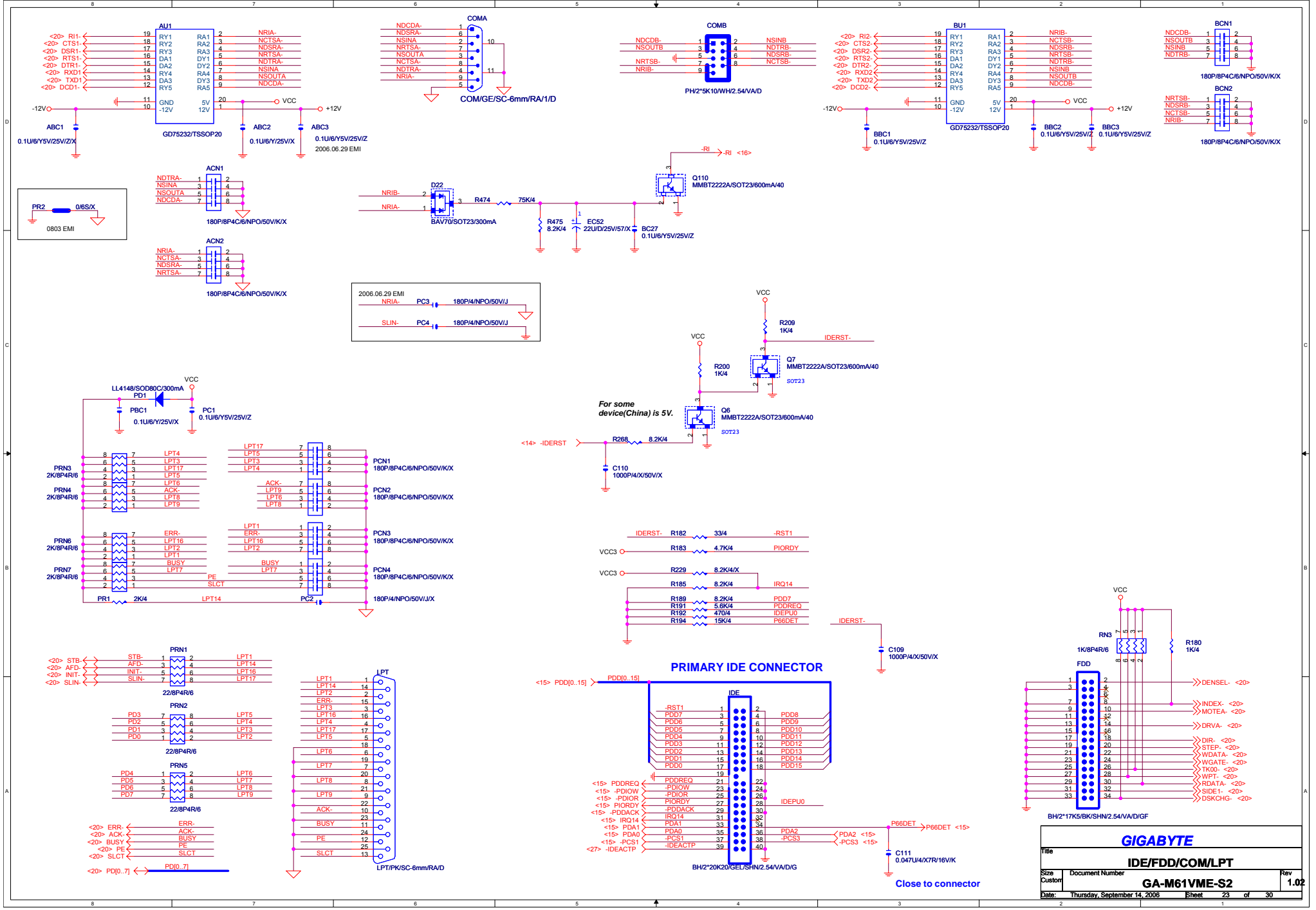
CPU FAN



KB & MS

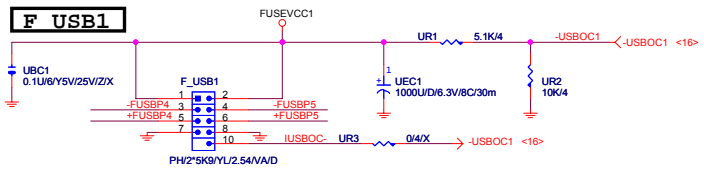


GIGABYTE			
FAN/HWMO KB/MS			
Title	Document Number		Rev
Size	Custom		1.02
GA-M61VME-S2			
Date:	Thursday, September 14, 2006	Sheet	22 of 30

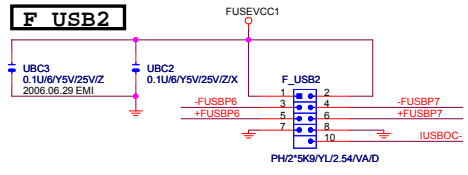


GIGABYTE		
IDE/FDD/COM/LPT		
Size Custom		Rev 1.02
GA-M61VME-S2		
Date: Thursday, September 14, 2006	Sheet 23	of 30

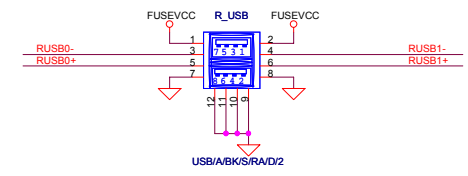
F USB1



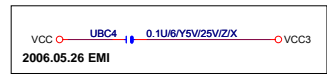
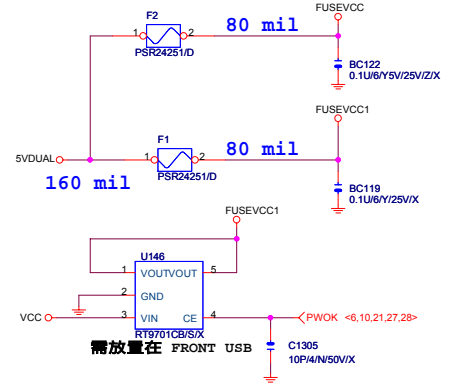
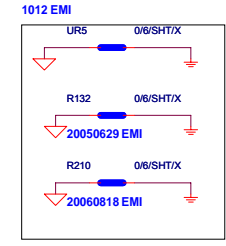
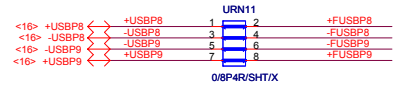
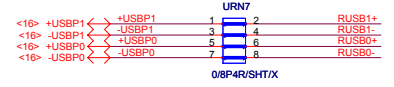
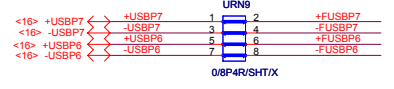
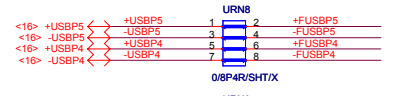
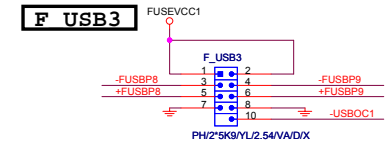
F USB2

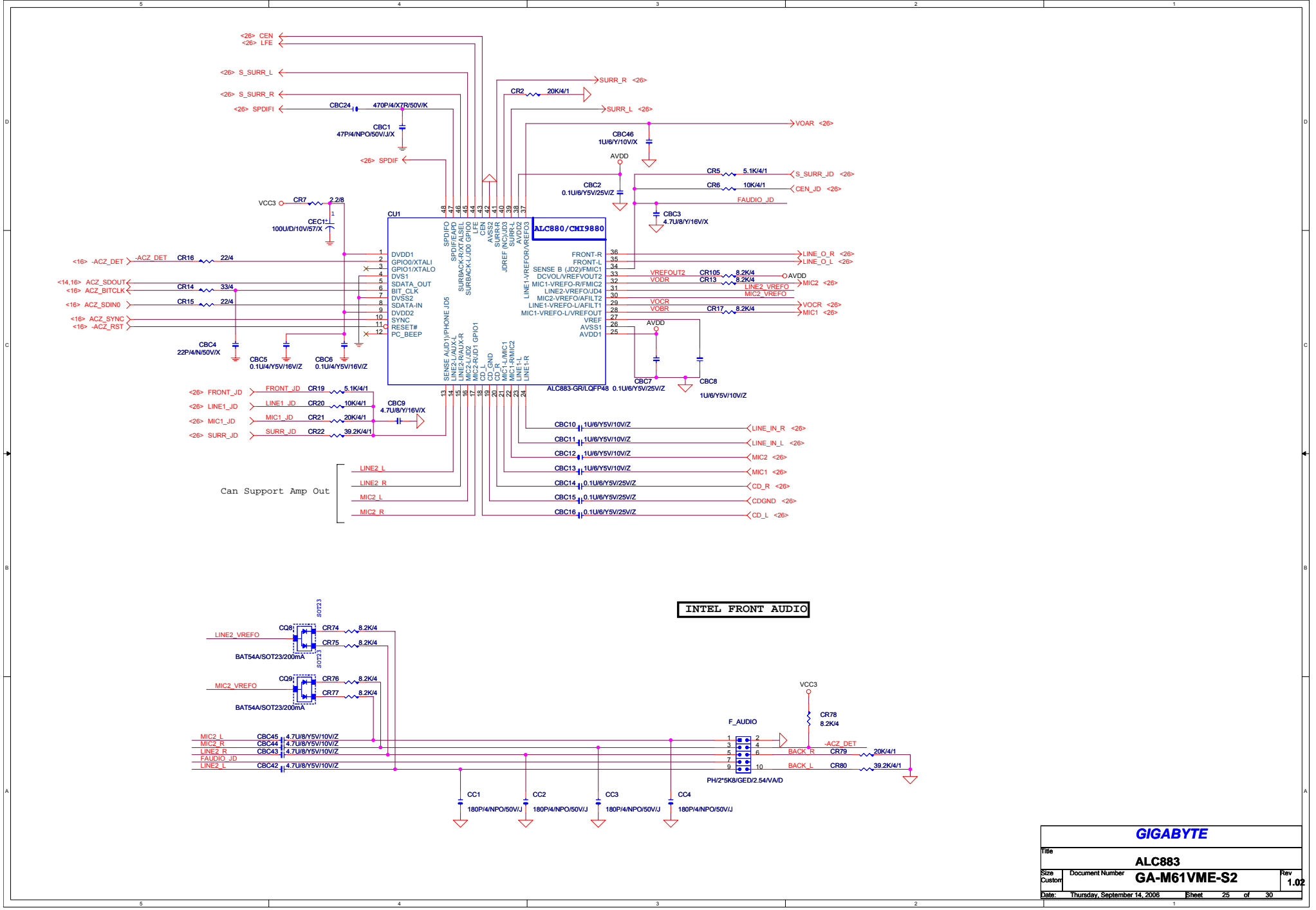


R USB

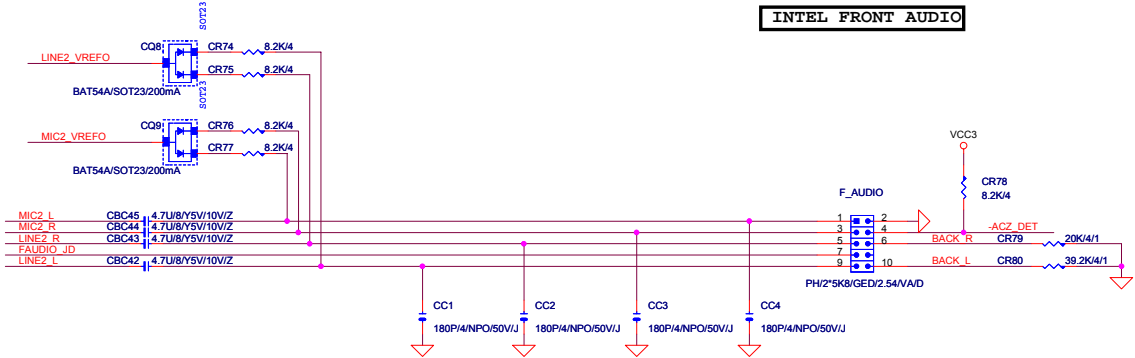


F USB3

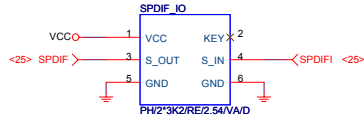
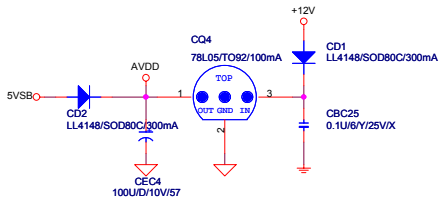




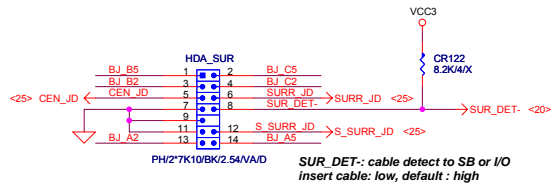
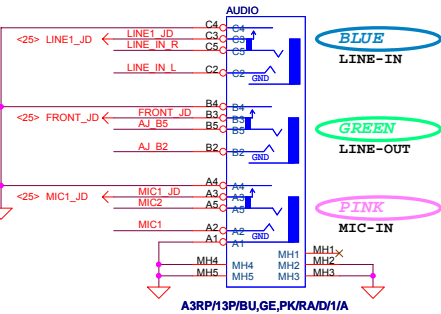
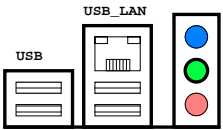
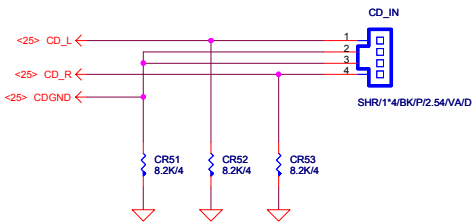
INTEL FRONT AUDIO



GIGABYTE		
Title		
ALC883		
Size	Document Number	Rev
Custom	GA-M61VME-S2	1.02
Date:	Thursday, September 14, 2006	Sheet 25 of 30

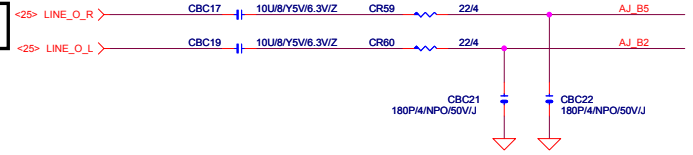


CD IN

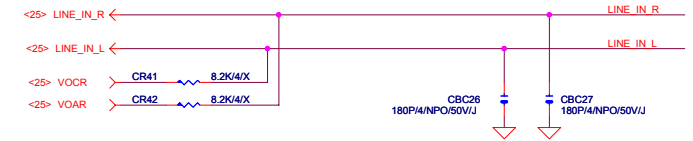


A3RJ13P/BU[11NR6-403006-01_11NR6-403006-02]
3RJ+15F[11NR6-403004-11]

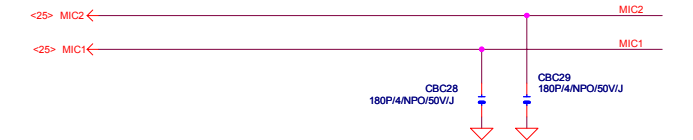
LINE OUT FRONT OUT



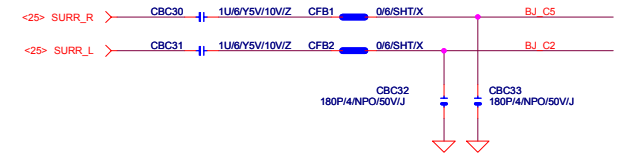
LINE-IN



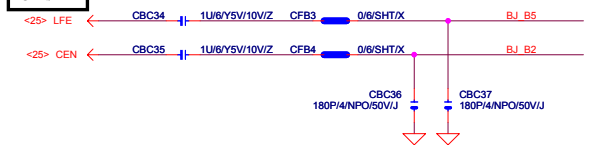
MIC



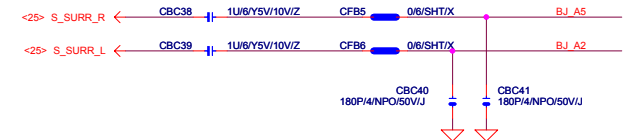
SURROUND



CEN/LFE

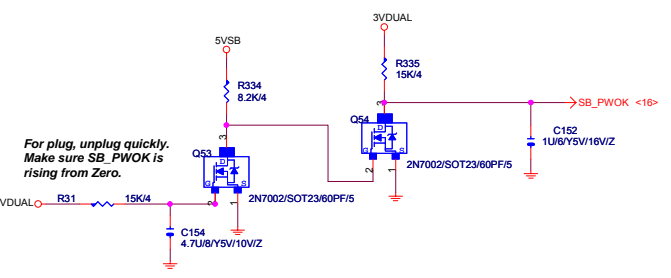
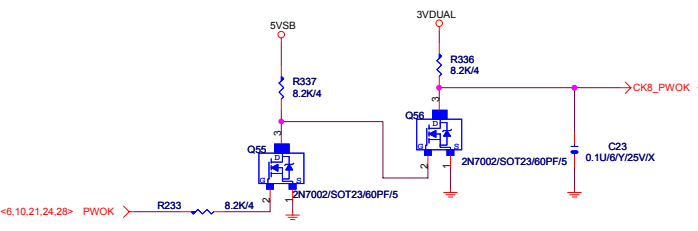
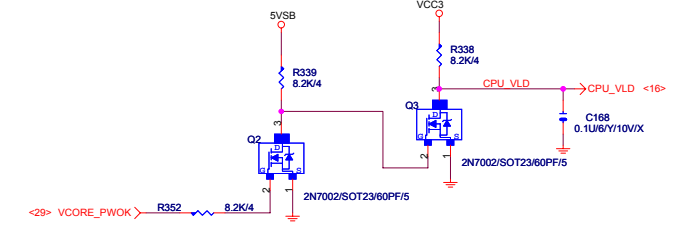
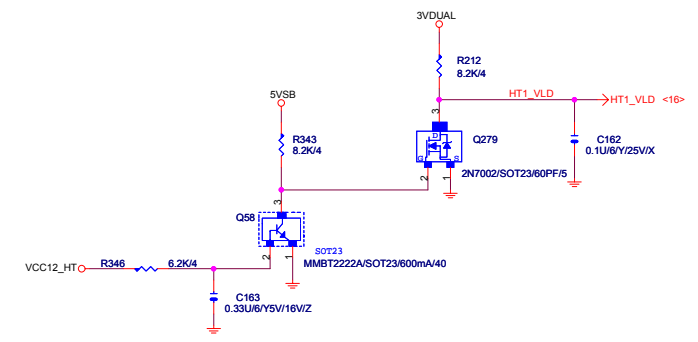
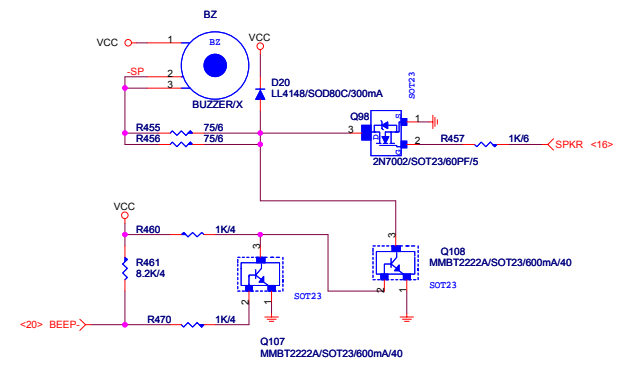
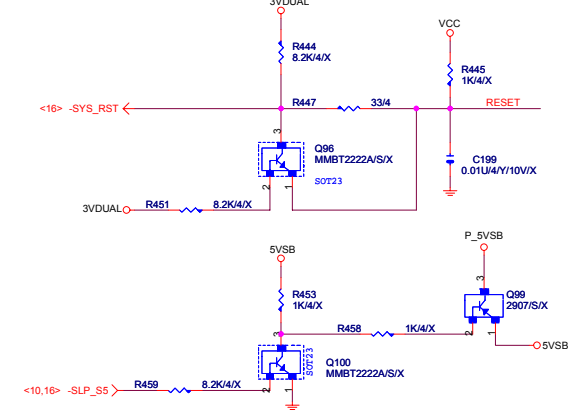
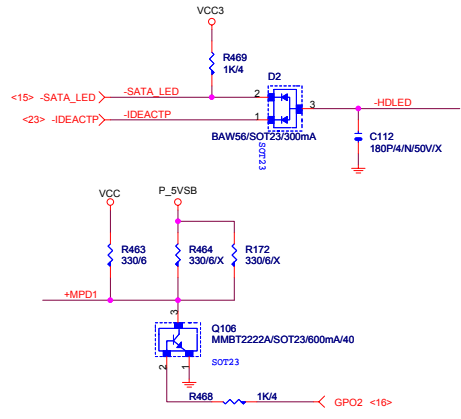
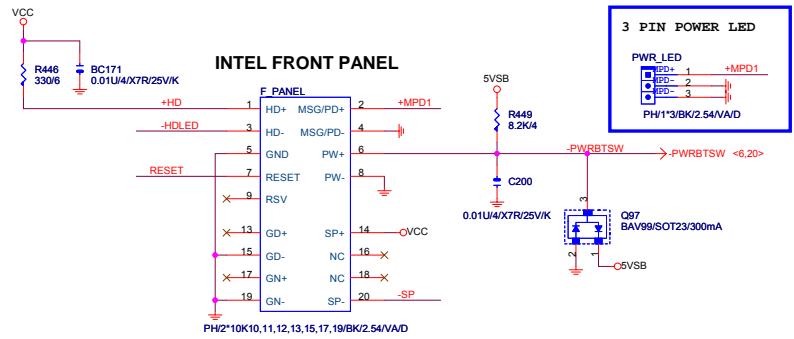


SURR BACK



GIGABYTE

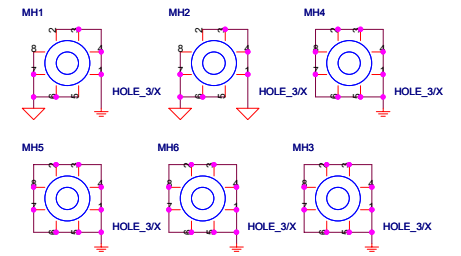
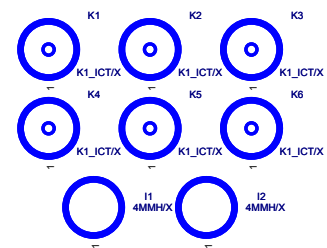
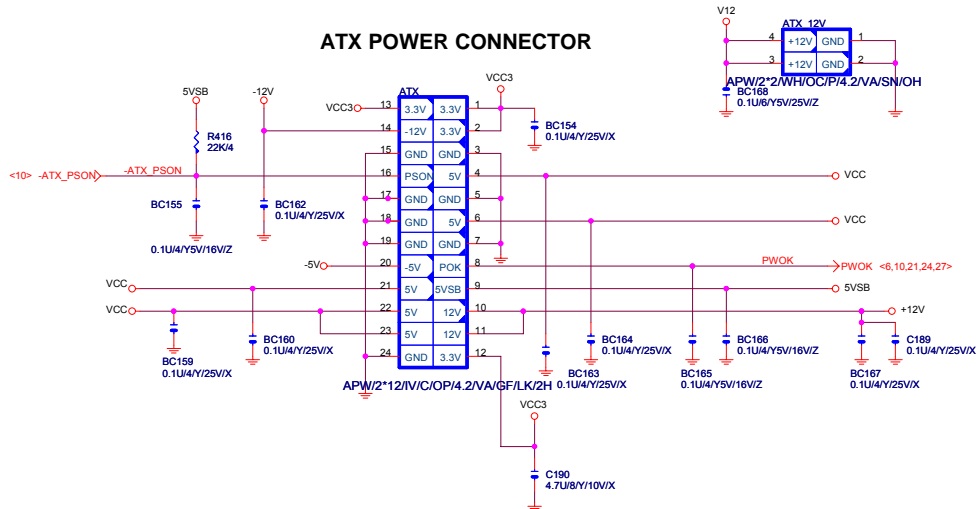
Title		
AUDIO JACK		
Size	Document Number	Rev
Custom	GA-M61VME-S2	1.02
Date:	Thursday, September 14, 2006	Sheet 28 of 30



For plug, unplug quickly.
Make sure SB_PWOK is rising from Zero.

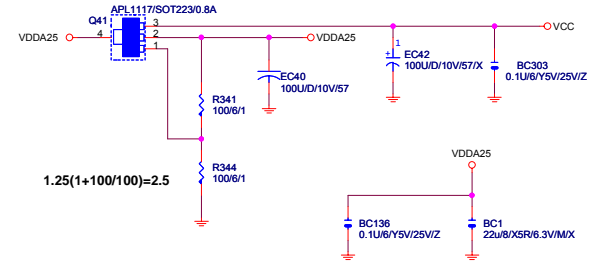
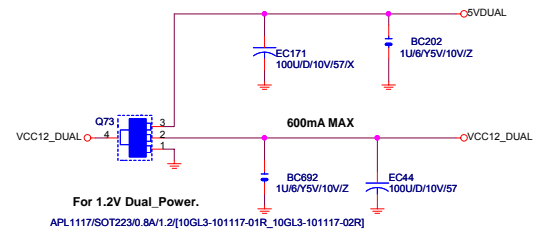
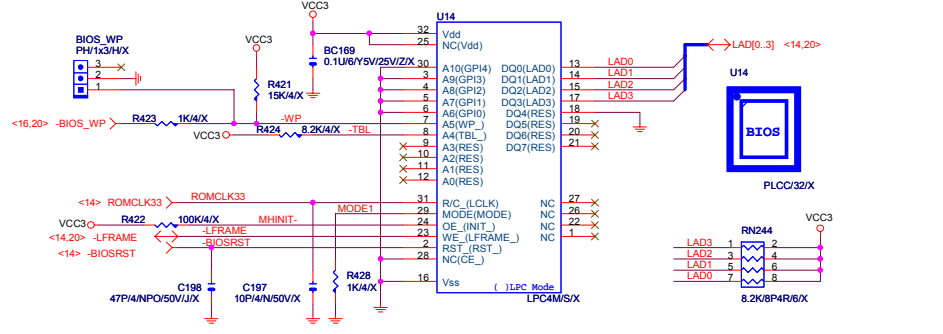
GIGABYTE		
PANEL & BUZZER		
Title	Document Number	Rev
Size	Custom	GA-M61VME-S2
Date:	Sheet	27 of 30
	2	1

ATX POWER CONNECTOR

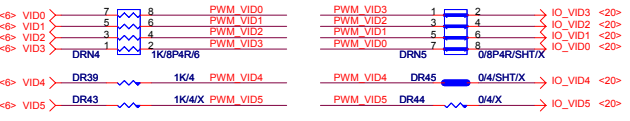
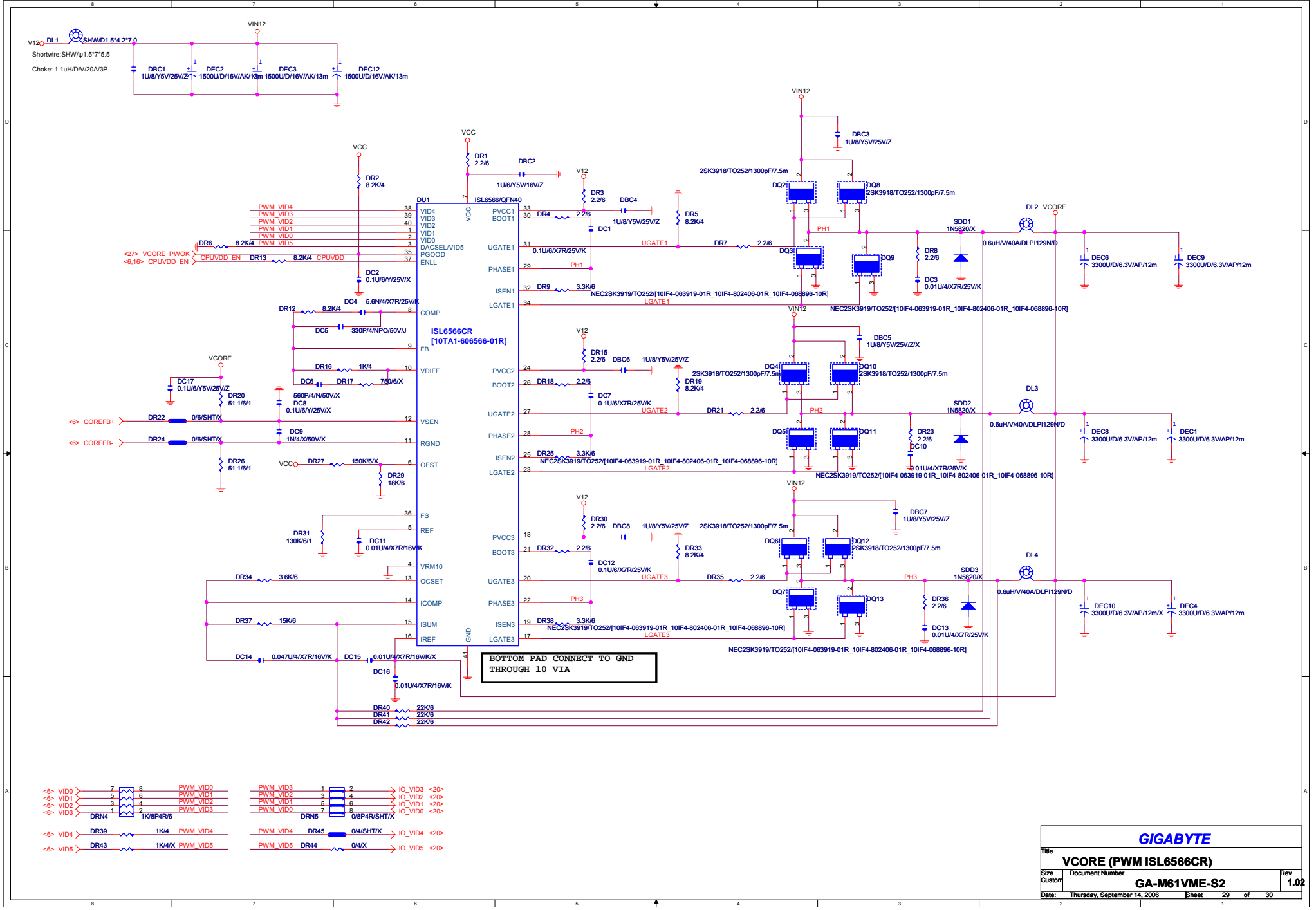


2006.06.29 EMI

+12V	C24	0.1U/4Y/5V/16V/Z
VCC3	C25	0.1U/4Y/5V/16V/Z
VCC	C26	0.1U/4Y/5V/16V/Z



GIGABYTE			
Title ATX CON, BIOS, VDDA25, VCC12_DUAL			
Size	Document Number	Rev	
Custom	GA-M61VME-S2	1.02	
Date:	Sheet	28	of 30



GIGABYTE			
VCORE (PWM ISL6566CR)			
Title	Document Number	Rev	1.02
Size	Custom	GA-M61VME-S2	
Date:	Thursday, September 14, 2006	Sheet	29 of 30

www.s-manuals.com