

## Chapter 2

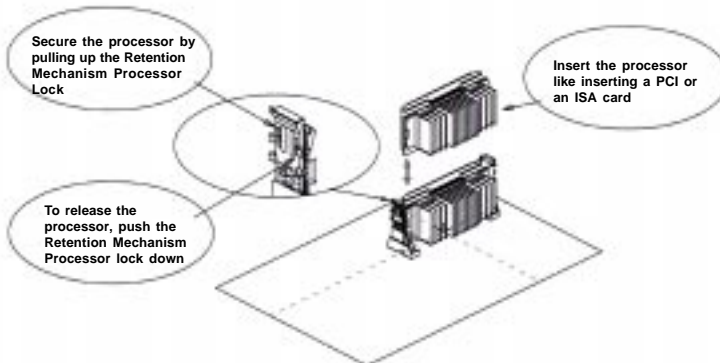
## HARDWARE INSTALLATION

### 2.1 Central Processing Unit: CPU

#### 2.1-1 Processor Installation Procedure

**Step 1:** Install the Retention Mechanism.

Attach the Retention Mechanism to the Mainboard. Push the Plastic lock to secure the Retention Mechanism into the mainboard.



**Step 2:** Install the Processor.

Insert the Processor like inserting a PCI or an ISA card.

**Step 3:** Lock the Processor.

Lock the processor by pulling up the Retention Mechanism processor lock shown above.

**Note:** The Retention Mechanism processor lock can only lock S.E.C.C. 2 and S.E.P.P. processor.

### 2.1-2 CPU Core Speed Derivation Procedure

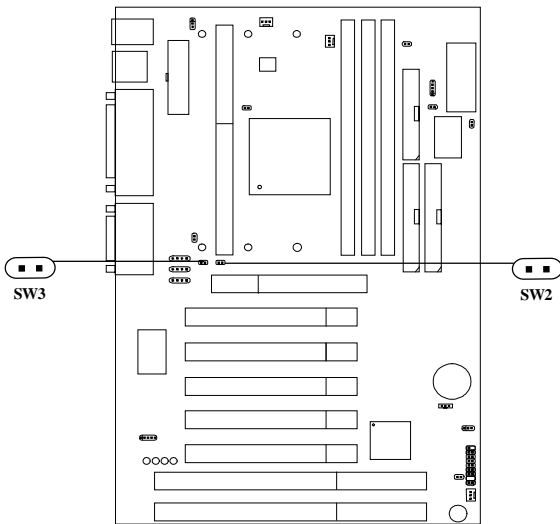
1. This mainboard can auto-detect the Core/Bus (Fraction) ratio of the CPU

<b>If</b>	<u>CPU Clock</u>	=	66MHz
	<u>Core/Bus ratio</u>	=	3.5
<b>then</b>	<u>CPU core speed</u>	=	<u>Host Clock</u> x <u>Core/Bus ratio</u>
		=	66MHz x 3.5
		=	233MHz

**Note:** CPU Vcore and Vi/o can be modified through CMOS.  
Vcore for CPU.  
Vi/o for Northbridge.

2.1-3 Overclocking Jumper: SW2/SW3

Overclocking is a process of operating a CPU/Processor beyond its specified frequency. SW2/SW3 is used for overclocking.

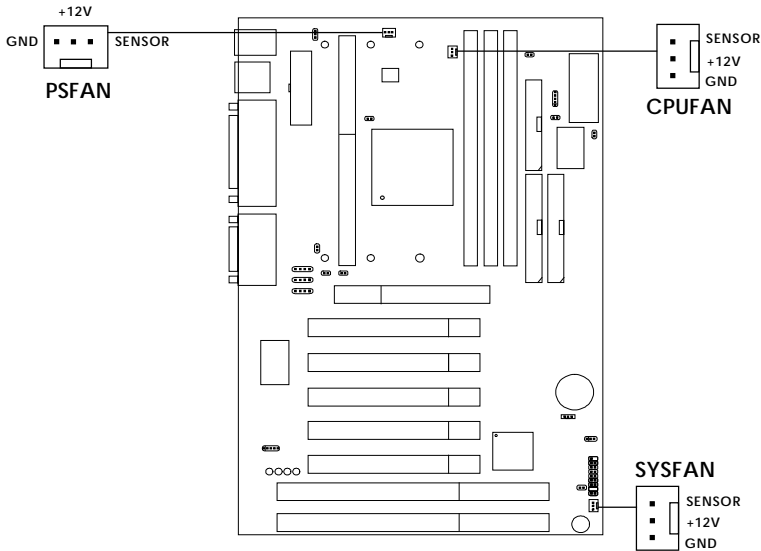


SW2	SW3	Feature
		Automatically detect 66MHz,100MHz CPU Bus Frequency
		Virtually set CPU Bus Frequency into 100MHz

**Note** If you used this jumper for overclocking, you also need to modify the CPU Bus ratio throuh CMOS.

### 2.1-4 Fan Power Connectors: CPUFAN/PSFAN/SYSFAN

These connectors support system cooling fan with +12V. It supports three pin head connector. When connecting the wire to the connector, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If your mainboard has System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of this function.



**PSFAN** : Power Supply Fan

**CPUFAN** : Processor Fan

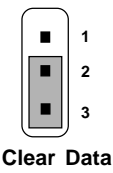
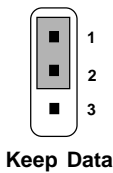
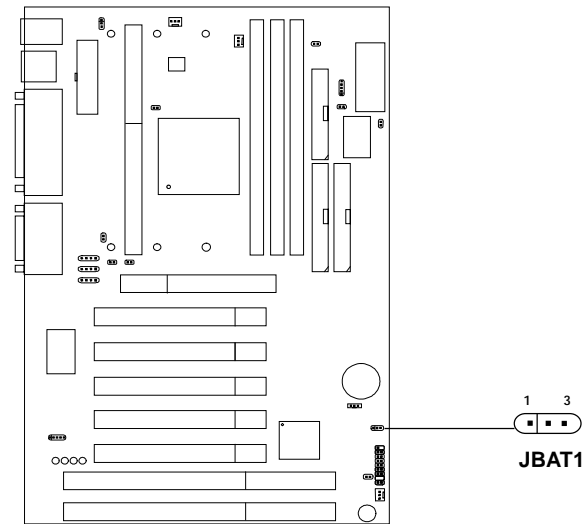
**SYSFAN** : System(Chassis) Fan

For fans with fan speed sensor, every rotation of the fan will send out 2 pulses. System Hardware Monitor will count and report the fan rotation speed.

- Note:**
1. Always consult vendor for proper CPU cooling fan.
  2. CPU FAN supports the FAN control, you can install PC Alert utility, this will automatically set the CPU FAN Speed by CPU temperature.

2.2 Clear CMOS Jumper: JBAT1

A battery must be used to retain the mainboard configuration in CMOS RAM. Short 1-2 pins of JBAT1 to store the CMOS data.

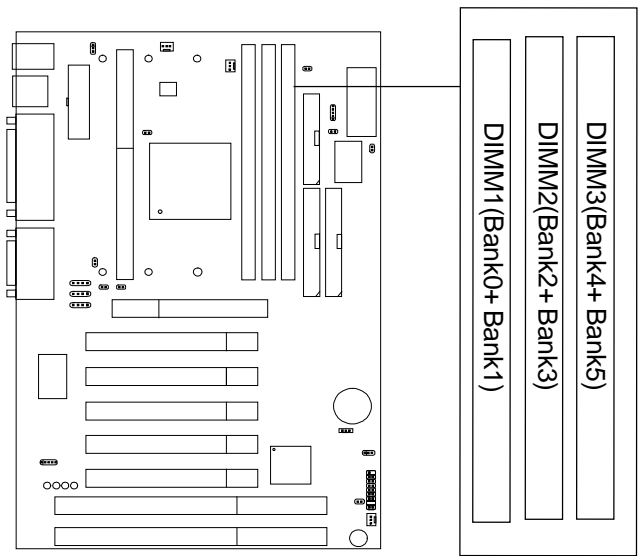


**Note:** You can clear CMOS by shorting 2-3 pin, while the system is off. Then, return to 1-2 pin position. Avoid clearing the CMOS while the system is on, it will damage the mainboard. Always unplug the power cord from the wall socket.

## 2.3 Memory Installation

### 2.3-1 Memory Bank Configuration

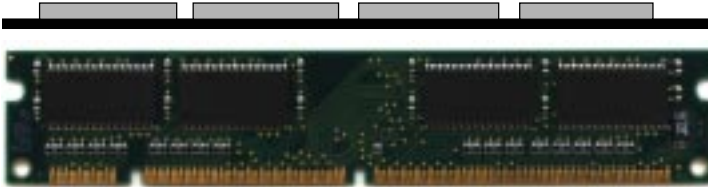
The mainboard supports a maximum memory size of 384MB (8M x 8) or 768MB (16M x 4) registered DIMM for SDRAM: It provides three 168-pin **unbuffered** DIMMs (Double In-Line Memory Module) sockets. It supports 8 MB to 256 Mbytes DIMM memory module.



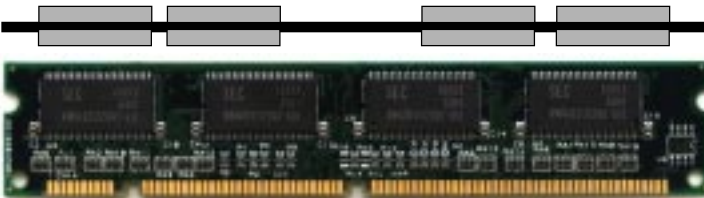
There are two kinds of DIMM specification supported by this mainboard: PC100 and PC66. If you use 66MHz CPU Bus Frequency, these two DIMM Specs. is supported. If you use 100 MHz CPU Bus Frequency, only PC100 DIMM Specs. is supported.

### 2.3-2 Memory Installation Procedures

#### A. How to install a DIMM Module

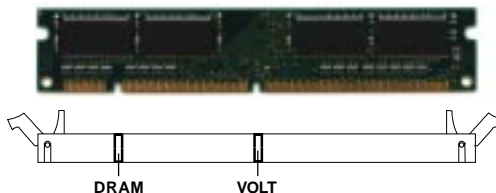


**Single Sided DIMM**



**Double Sided DIMM**

1. The DIMM slot has 2 Notch Keys “VOLT and DRAM”, so the DIMM memory module can only fit in one direction.
2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in.



3. The plastic clip at the side of the DIMM slot will automatically close.

### 2.3-3 Memory Population Rules

1. Supports only SDRAM DIMM.
2. To operate properly, at least one 168-pin DIMM module must be installed.
3. This mainboard supports Table Free memory, so memory can be installed on DIMM 1, DIMM 2 or DIMM 3 in any order.
4. Supports 3.3 volt DIMM.
5. The DRAM addressing and the size supported by the mainboard is shown below:

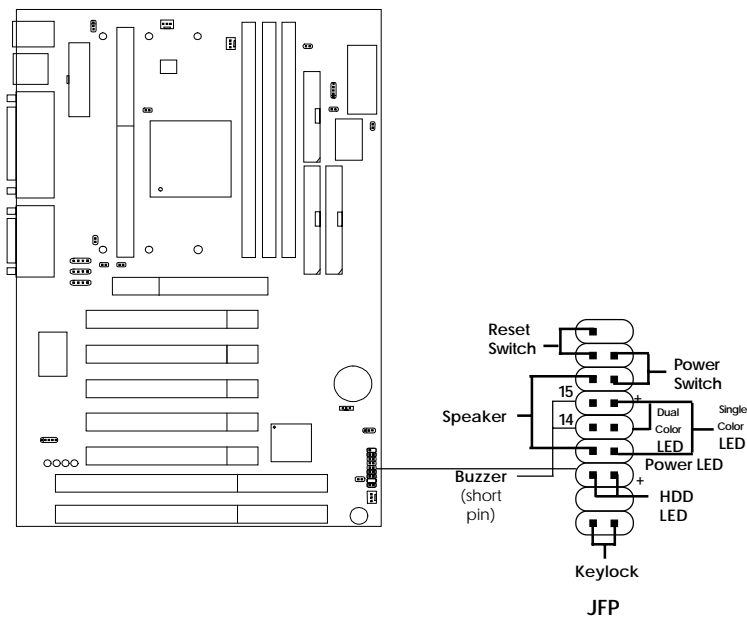
**Table 2.3-1 SDRAM Memory Addressing**

DRAM Tech.	DRAM Density & Width	DRAM Addressing	Address Size		MB/DIMM	
			Row	Column	Single no. Side(S) pcs.	Double no. Side(D) pcs.
16M	1Mx16	ASYM	11	8	8MBx4	16MBx8
	2Mx8	ASYM	11	9	16MBx8	32MBx16
	4Mx4	ASYM	11	10	32MB	64MB
64M	2Mx32	ASYM	11	9	32MBx2	64MBx4
	2Mx32	ASYM	12	8	16MBx2	32MBx4
	4Mx16	ASYM	11	10	32MB	64MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
	16Mx4	ASYM	13	10	128MB	256MB
64M	2Mx32	ASYM	12	8	16MB	32MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
	16Mx4	ASYM	13	10	128MB	256MB



2.4 Case Connector: JFP

The Power Switch, Reset Switch, Power LED, Speaker, Keylock and HDD LED are all connected to the JFP connector block.



### **2.4-1 Power Switch**

Connect to a 2-pin push button switch. This switch has the same feature with JRMS1.

### **2.4-2 Reset Switch**

Reset switch is used to reboot the system rather than turning the power ON/OFF. Avoid rebooting while the HDD LED is lit. You can connect the Reset switch from the system case to this pin.

### **2.4-3 Power LED**

The Power LED is lit while the system power is on. Connect the Power LED from the system case to this pin. There are two types of LED that you can use: 3-pin single color LED or 2-pin dual color LED(ACPI request).

- a. 3 pin single color LED connect to pin 4, 5, & 6. This LED will lit when the system is on.
- b. 2 pin dual color LED connect to pin 5 & 6.

**GREEN** Color: Indicate the system is in full on mode.

**ORANGE** Color: Indicate the system is in suspend mode.

### **2.4-4 Speaker**

Speaker from the system case is connected to this pin.

If on-board Buzzer is available:

Short pin 14-15: On-board Buzzer Enabled.

Open pin 14-15: On-board Buzzer Disabled.

### **2.4-5 HDD LED**

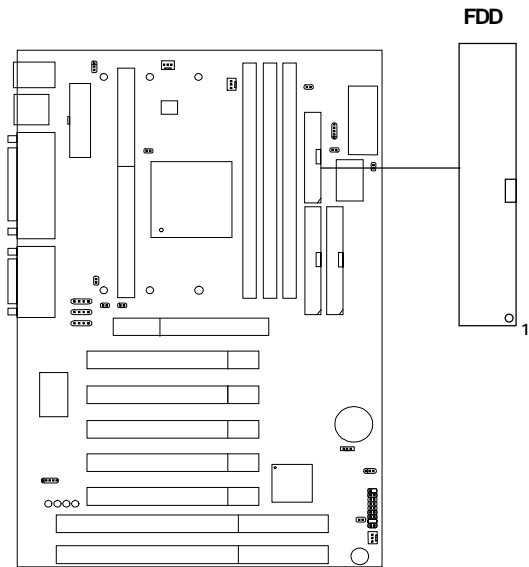
HDD LED shows the activity of a hard disk drive. Avoid turning the power off while the HDD led is lit. You can connect the HDD LED from the system case to this pin.

### **2.4-6 Keylock**

Keylock allows you to disable the keyboard for security purposes. You can connect the keylock to this pin.

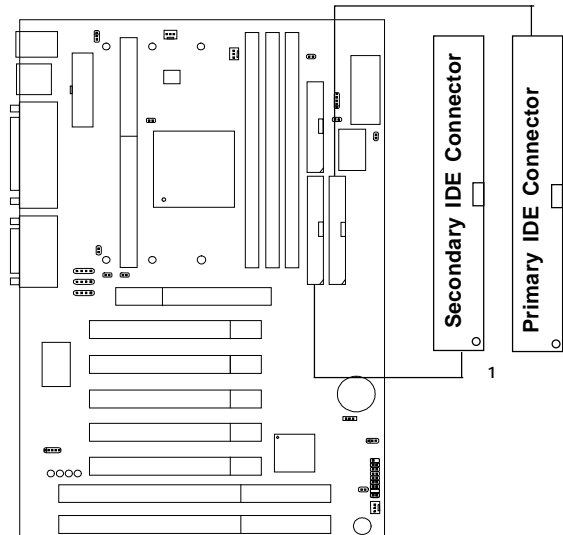
**2.5 Floppy Disk Connector: FDD**

The mainboard also provides a standard floppy disk connector (FDD) that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. This connector supports the provided floppy drive ribbon cables.



## 2.6 Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE Controller that provides PIO mode 0~4, Bus Master, and Ultra DMA/33 function. It has two HDD connectors IDE1 (primary) and IDE2 (secondary). You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices to IDE1 and IDE2. These connectors support the provided IDE hard disk cable.



### IDE1(Primary IDE Connector)

The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

### IDE2(Secondary IDE Connector)

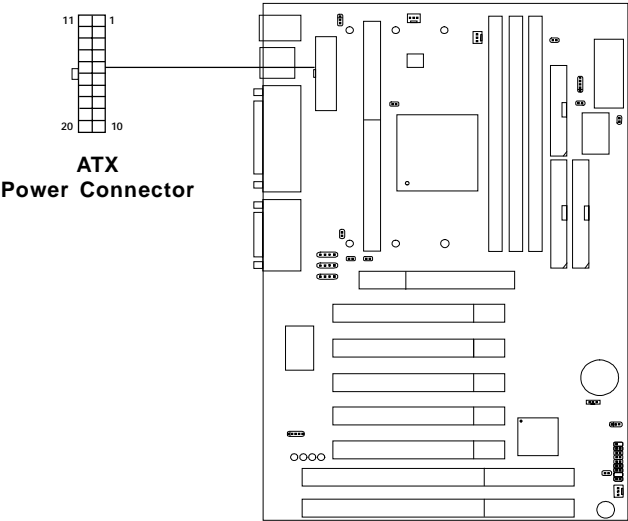
IDE2 can also connect a Master and a Slave drive.

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**2.7 Power Supply**

**2.7-1 ATX 20-pin Power Connector: JWR1**

This connector supports the power button on-board. Using the ATX power supply, functions such as Modem Ring Wake-Up and Soft Power Off are supported by this mainboard. This power connector supports instant power on function which means that system will boot up instantly when the power connector is inserted on the board.



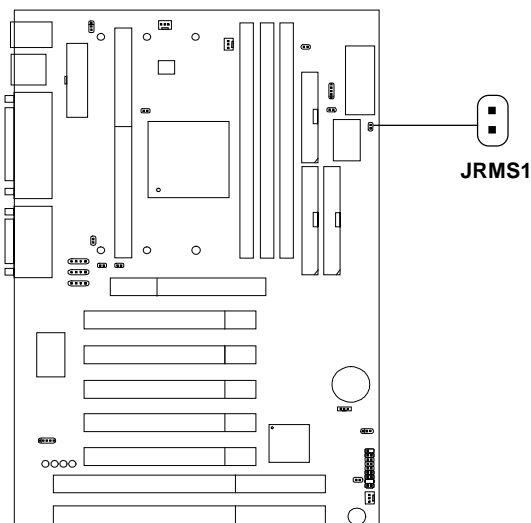
**PIN DEFINITION**

<b>PIN</b>	<b>SIGNAL</b>	<b>PIN</b>	<b>SIGNAL</b>
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

**Warning:** Since the mainboard has the instant power on function, make sure that all components are installed properly before inserting the power connector to ensure that no damage will be done.

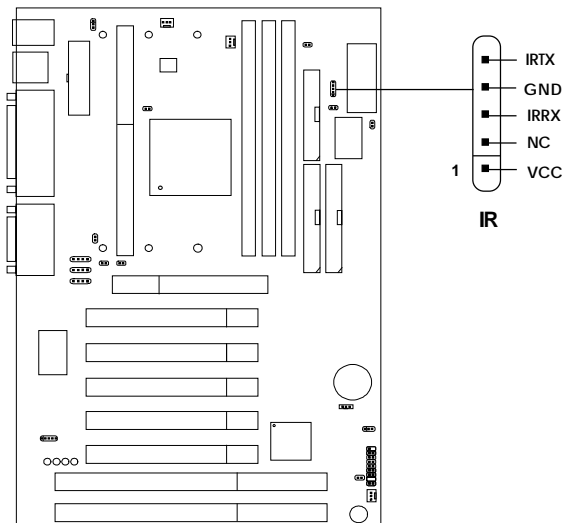
### 2.7-2 Remote Power On/Off Switch: JRMS1

Connect to a 2-pin push button switch. During OFF state, press once and the system turns on. **During ON stage, push once and the system goes to sleep mode: pushing it more than 4 seconds will change its status from ON to OFF.** If you want to change the setup, you could go to the BIOS Power Management Setup.



**2.8 IrDA Infrared Module Connector: IR**

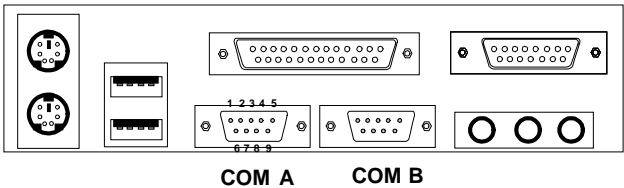
The mainboard provides one 5-pin infrared (IR) connector for IR modules. This connector is for optional wireless transmitting and receiving infrared module. You must configure the setting through the BIOS setup to use the IR function. FIR and Consumer IR are reserved functions.





**2.9 Serial Port Connectors: COM A and COM B**

The mainboard has two 9-pin male DIN connectors for serial port COM A and COM B. These ports are 16550A high speed communication port that send/receive 16 bytes FIFOs. You can attach a mouse or a modem cable directly into this connector.



**Serial Port (9-pin Male)**

**PIN DEFINITION**

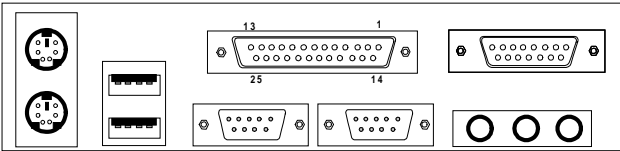
PIN	SIGNAL
1	<b>DCD</b> (Data Carry Detect)
2	<b>SIN</b> (Serial In or Receive Data)
3	<b>SOUT</b> (Serial Out or Transmit Data)
4	<b>DTR</b> (Data Terminal Ready)
5	<b>GND</b>
6	<b>DSR</b> (Data Set Ready)
7	<b>RTS</b> (Request To Send)
8	<b>CTS</b> (Clear To Send)
9	<b>RI</b> (Ring Indicate)

**2.10 Parallel Port Connector: LPT1**

The mainboard provides a 25 pin female centronic connector for LPT. A parallel port is a standard printer port that also supports Enhanced Parallel Port(EPP) and Extended capabilities Parallel Port(ECP). See connector and pin definition below:

**Parallel Port (25-pin Female)**

**LPT 1**

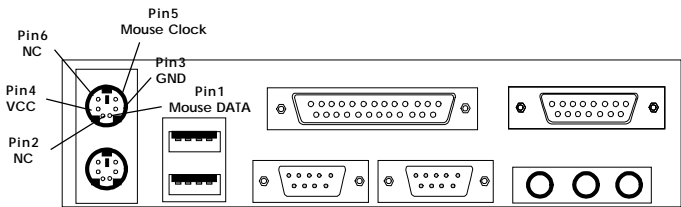


**PIN DEFINITION**

PIN	SIGNAL	PIN	SIGNAL
1	STROBE	14	AUTO FEED#
2	DATA0	15	ERR#
3	DATA1	16	INIT#
4	DATA2	17	SLIN#
5	DATA3	18	GND
6	DATA4	19	GND
7	DATA5	20	GND
8	DATA6	21	GND
9	DATA7	22	GND
10	ACK#	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SELECT		

**2.11 Mouse Connector: JKBMS1**

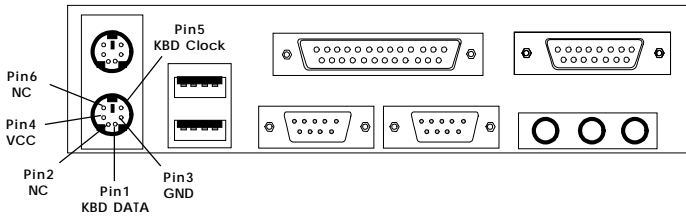
The mainboard provides a standard PS/2® mouse mini DIN connector for attaching a PS/2® mouse. You can plug a PS/2® mouse directly into this connector. The connector location and pin definition are shown below:



**PS/2 Mouse (6-pin Female)**

**2.12 Keyboard Connector: JKBMS1**

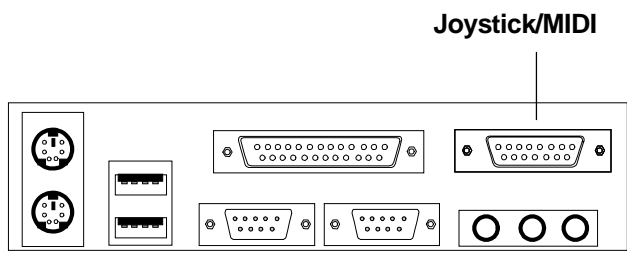
The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.



**PS/2 Keyboard (6-pin Female)**

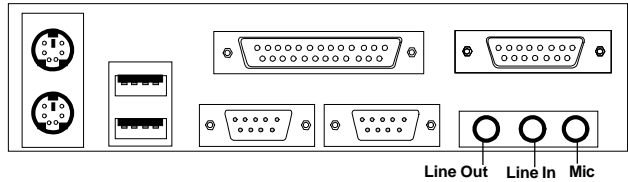
2.13 Joystick/Midi Connectors

You can connect joystick or game pad to this connector.



2.14 Audio Port Connectors

**Line Out** is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape layer, or other audio devices. **Mic** is a connector for the microphones.

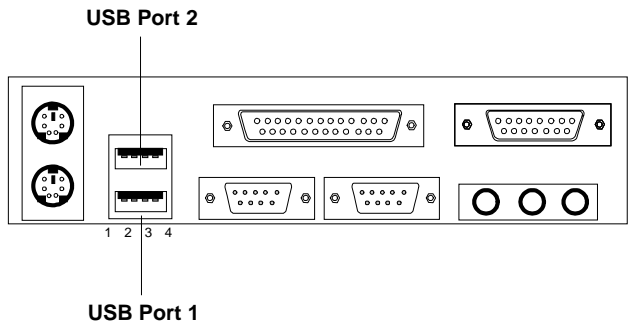


1/8" Stereo Audio Connectors

**NOTE:** Line Out supports SPDIF converter. In case, you use the SPDIF converter, change the output mode to digital on the audio setting.

2.15 USB Connectors

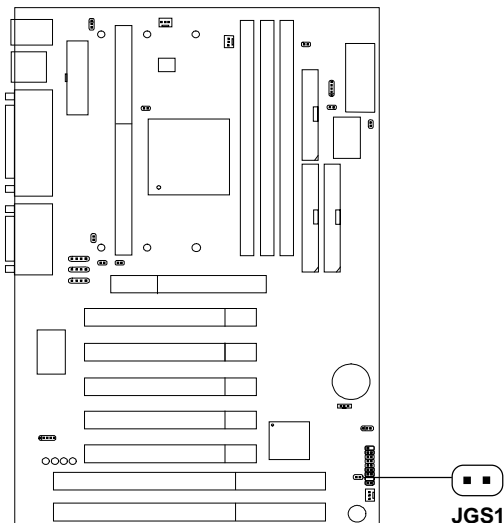
The mainboard provides a **UHCI(Universal Host Controller Interface) Universal Serial Bus root** for attaching USB devices like: keyboard, mouse and other USB devices. You can plug the USB device directly to this connector.



PIN	SIGNAL
1	VCC
2	-Data0
3	GND
4	+Data0

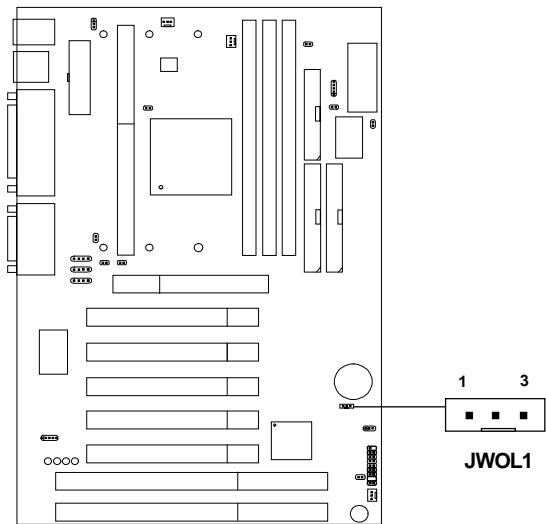
## **2.16 Power Saving Switch Connector: JGS1**

Attach a power saving switch to **JGS1**. When the switch is pressed, the system immediately goes into suspend mode. Press any key and the system wakes up.



2.17 Wake-Up on LAN Connector: JWOL1

The JWOL connector is for use with LAN add-on cards that supports Wake Up on LAN function. To use this function, you need to set the “Wake-Up on LAN” to enable at the BIOS Power Management Setup.



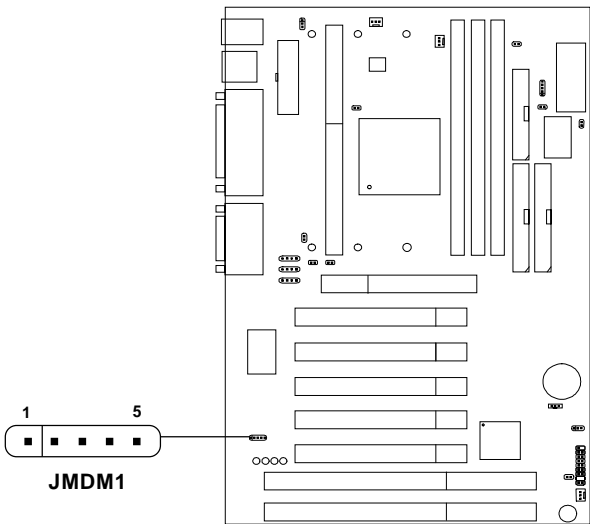
PIN	SIGNAL
1	5VSB
2	GND
3	MP_WAKEUP

**Note:** LAN wake-up signal is active “high”.

**Note:** To be able to use this function, you need a power supply that provide enough power for this feature.  
(Power supply with 750 ma 5V Stand-by)

2.18 Modem Wake Up Connector: JMDM1

The JMDM1 connector is use for the Modem add-on card which supports the Modem Wake Up function. To use this function, you need to set the “Resume By Ring” to enable at the BIOS Power Management Setup.



PIN	SIGNAL
1	NC
2	GND
3	MDM_WAKEUP
4	NC
5	5VSB

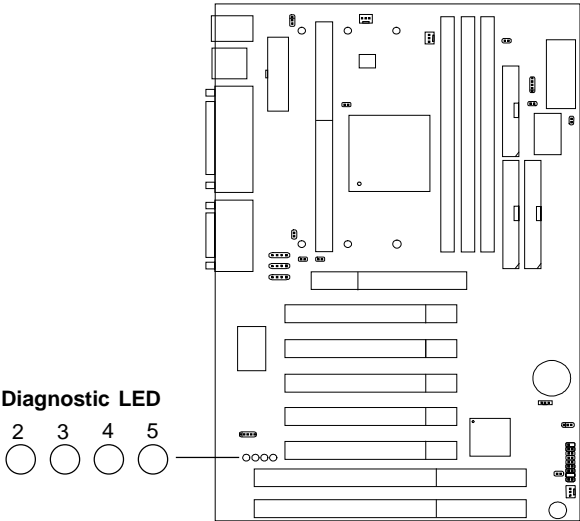
**Note:** Modem wake-up signal is active “low”.

**Note:** To be able to use this function, you need a power supply that provide enough power for this feature.  
(Power supply with 750 ma 5V Stand-by)



**2.19 Diagnostic LED**

The mainboard provides a Special Diagnostic LED for users to be aware of their mainboard conditions. The LED helps user determine the problem of the mainboard.



## Diagnostic LED Function

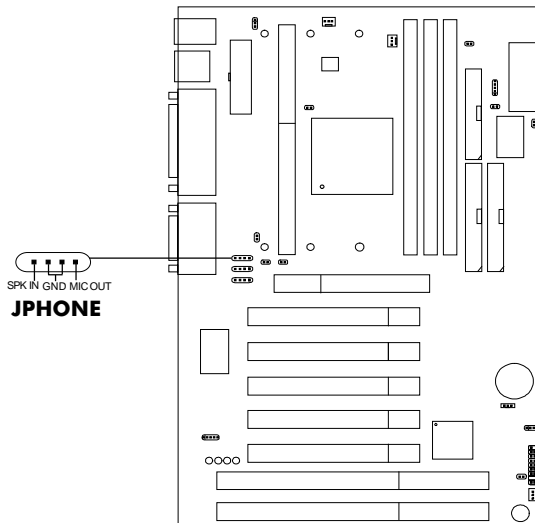
<b>Diagnostic LED 5 4 3 2</b>	<b>Description</b>	<b>Possible Problem/ Solution</b>
0 0 0 0	System Power ON. This will start BIOS Initialization	System D-LED will hang here The Processor might be damage or not installed properly Damage/Discharge Lithium Battery
0 0 0 1	Early Chipset Initialization	***
0 0 1 0	Memory Detection Test Testing Onboard memory size	System D-LED will hang here The Memory module might be damage or not installed properly.
0 0 1 1	Decompressing BIOS image to RAM for fast booting.	***
0 1 0 0	Initializing Keyboard Controller	***
0 1 0 1	Testing VGA BIOS This will start writing VGA sign-on messages to the screen.	System D-LED will produce Beep sound The VGA card might be damage or not inserted properly.
0 1 1 0	Processor Initialization This will show information regarding the processor (like brand name, system bus, etc...)	***
0 1 1 1	Testing RTC (Real Time Clock)	Low Lithium Battery
1 0 0 0	Initializing Video Interface This will start detecting CPU clock, checking type of video onboard. Then, detect and initialize the video adapter	***
1 0 0 1	BIOS Sign On This will start showing information about Logo, processor brand name, etc.....	***
1 0 1 0	Testing Base and Extended Memory Testing base memory from 240K to 640K and extended memory above 1MB using various patterns.	***
1 0 1 1	Assign Resource to all ISA	***
1 1 0 0	Initializing Hard Drive Controller This will initialize IDE drive and controller	Check IDE cable for proper installation
1 1 0 1	Initializing Floppy Drive Controller This will initialize Floppy Drive and controller	System D-LED will hang here The Floppy Drive Cable might not be installed properly
1 1 1 0	Boot Attempt This will set low stack and boot via INT19h.	***
1 1 1 1	Operating System Booting.	***

1 = GREEN 0 = RED

\*\*\* Check local Vendor for possible internal mainboard problem.

## 2.20 Modem-In: JPHONE (Optional)

The connector is for Modem with internal voice connector.

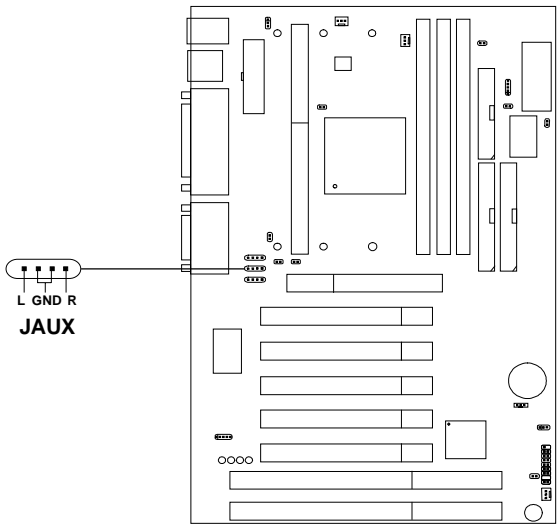


SPK\_IN is connected to the Modem Speaker Out connector.

MIC\_OUT is connected to the Modem Microphone In connector.

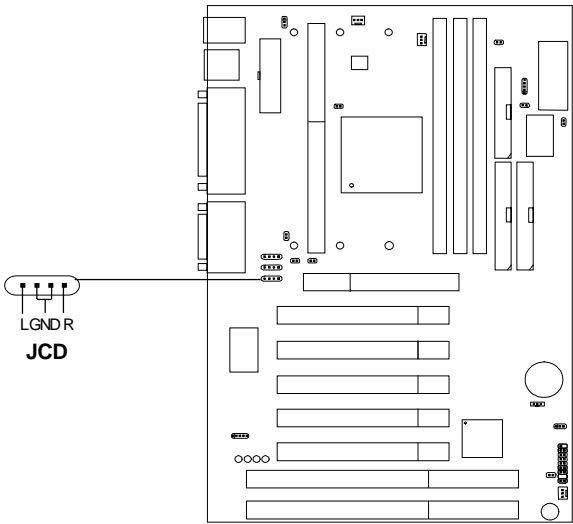
## **2.21 AUX Line In Connector: JAUX (Optional)**

This connector is used for DVD Add on Card with Line In connector.



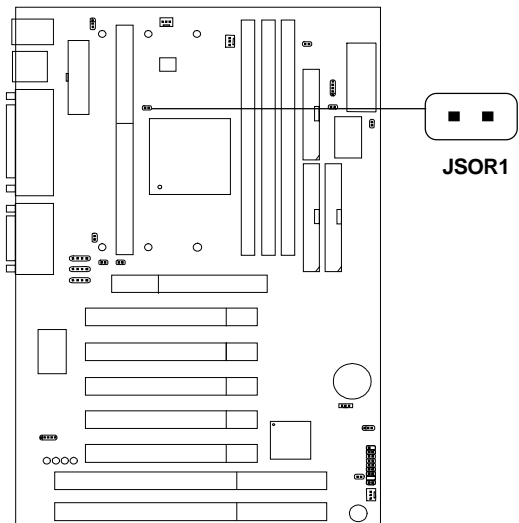
**2.22 CD-In Modem Connector: JCD (Optional)**

This connector is for CD-ROM voice connector.



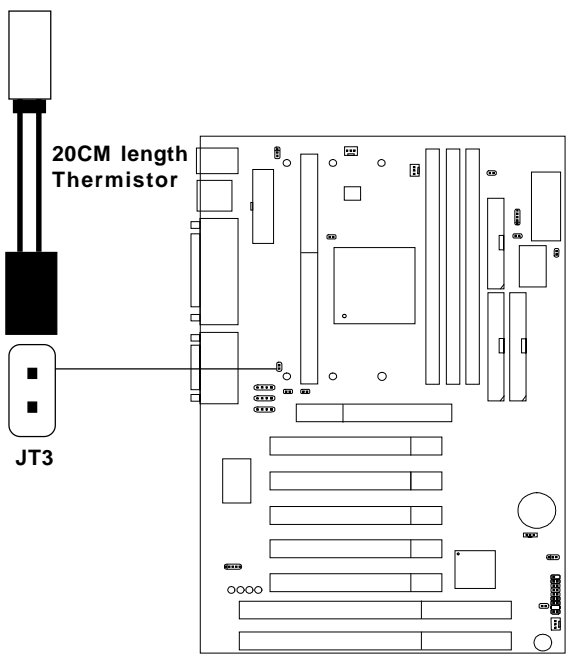
## **2.23 CPU Temperature Sensor: JSOR1**

This is used to check the CPU temperature. The JSOR1 is a sensor that is placed near the processor heatsink. This will monitor the CPU temperature.



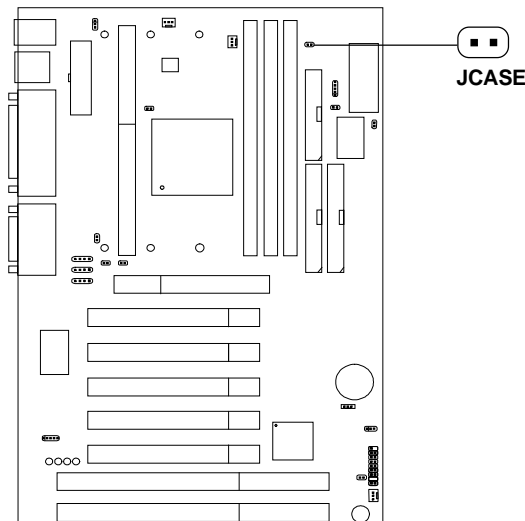
**2.24 TOP TECH. III: JT3 (Optional)**

This is used to check the AGP card or BX chipset temperature. The JT3 is a 2-pin connector which can be inserted with a 20cm length thermistor. It is located near the chipset heatsink that monitors the chipset temperature. The BIOS setup for “TOP TECH. III” should be set to enabled.



**2.25 Chassis Intrusion Switch Case: JCASE**

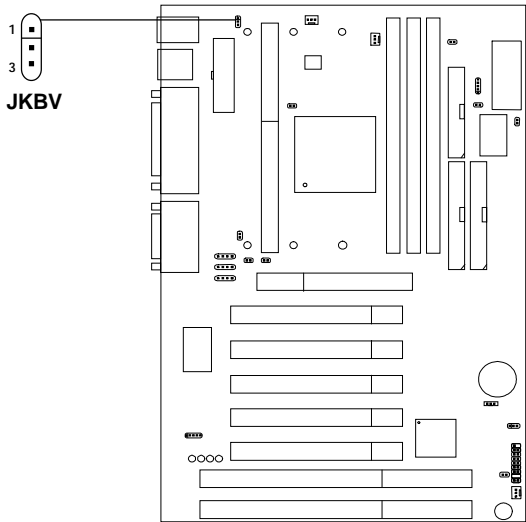
This connector is connected to 2-pin connector chassis switch. If the Chassis is open, the switch will be short. The system will record this status. To clear the warning, you must enter the BIOS setting and clear the status.





2.26 Keyboard Power: JKBV

The JKBV jumper is for setting keyboard power. This function should be set in the BIOS for the keyboard and PS/2 mouse Wake-up function.



A diagram of the JKBV jumper with pins 1 and 3 connected by a metal bridge.

5V Standby  
Enable keyboard  
power on function

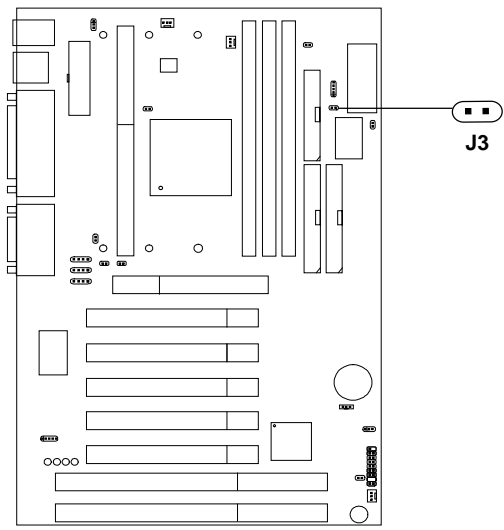
A diagram of the JKBV jumper with pins 1 and 2 connected by a metal bridge.

5V (default)  
Disable keyboard  
power on function

**Note:** To be able to use this function, you need a power supply that provide enough power for this feature.  
(Power supply with 750 mA 5V Stand-by)

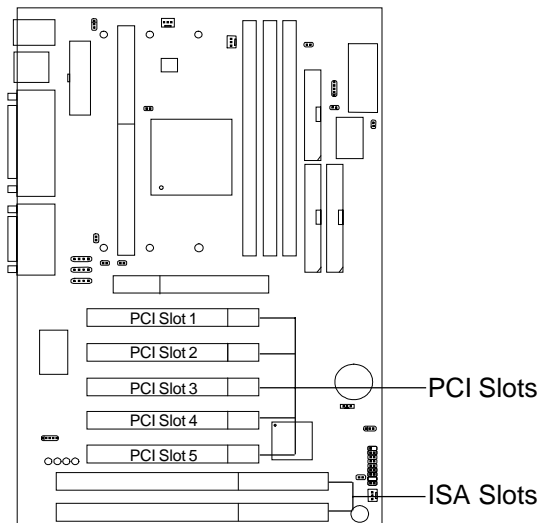
**2.27 J3**

This jumper is used to Enabled or Disabled the BIOS write.



## 2.28 PCI and ISA Slots

There are 5 PCI slots and 2 ISA slots. All PCI slots can be used as master. But since the 1st and 5th PCI slots share the same bus master signal, only one of these slots can be used as a master at a time; which means that if a master card is installed in PCI slot 1, PCI Slot 5 can only accomodate a slave card, and vice versa.



- NOTE:**
1. If on-board Creative sound is not installed, then all 5 PCI slots can use Bus Master cards.
  2. If on-board Creative sound is installed, then PCI slots 2, 3 and 4 can still use Bus Master cards. However, only one of PCI slots 1 and 5 can use a Bus Master card at a time.
  3. PCI 2.2 Specification