# Chapter 2

# HARDWARE INSTALLATION

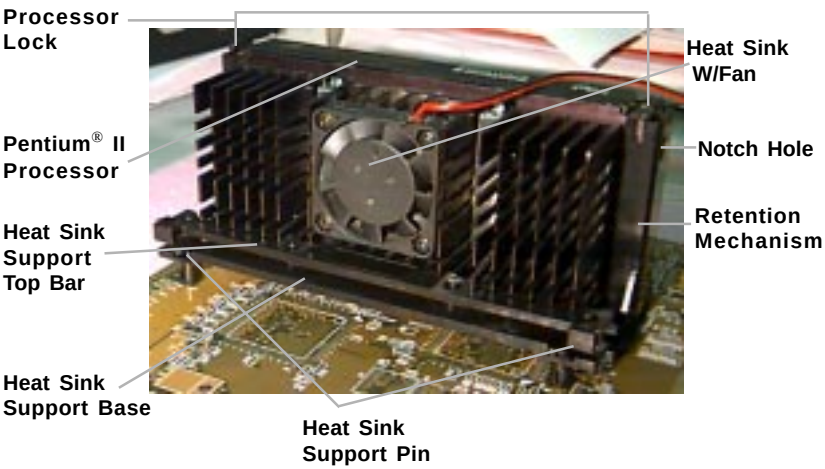
## 2.1 Central Processing Unit: CPU

The mainboard operates with **Intel® Pentium® II/III or Coppermine processor.** The mainboard used a CPU Slot called Slot 1 for easy CPU installation. To set the proper speed for the CPU, you should first check your mainboard. There are two kinds of mainboard: CPU Plug & Play mainboard & Standard mainboard. CPU Plug & Play mainboard speed setting is set on the BIOS setting. Standard mainboard speed setting is set by DIP switch. The CPU should always have a Heat Sink and a cooling fan attached to prevent overheating.

## 2.1-1 CPU Installation Procedures

Different kinds of Pentium® II processor that is currently used: the OEM version, the Boxed version, and Celeron™. OEM Pentium® II Processor has no Heat Sink, Fan and Heat Sink Support, the Boxed Pentium® II Processor is provided with Heat Sink w/ fan and Heat Sink Support, while the Celeron™ processor is a plane processor card without cover or heatsink..

## A. OEM Pentium® II Processor Installation Procedures




### Required Things:

**Pentium® II processor** - Processor.

***Retention Mechanism(RM)** - Plastic Guide that holds the S.E.C. Catridge in the Slot 1 connector.

***Retention Mechanism Attach Mount(RMAM)** - Bolt/Bridge assemblies inserted up through the bottom of the motherboard. RM secures to RMAM ( 2 RMAM required per RM ).

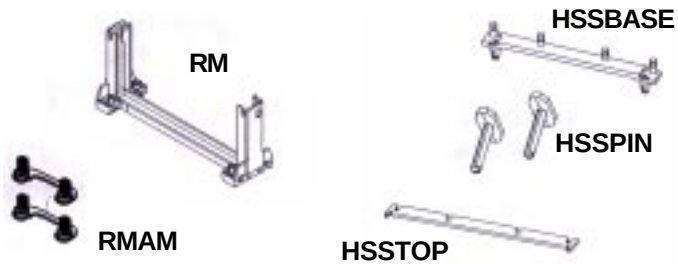
***Heat Sink Support Base (HSSBASE)** - Plastic support bar mounted to the mainboard under the ATX heatsink. (One leg is always bigger than the other one)

***Heat Sink Support Pin (HSSPIN)** - Plastic pins inserted through the HSSBASE to secure it to the mainboard (2 required per Assembly).

***Heat Sink Support Top Bar (HSSTOP)** - Plastic bar that clips onto the HSSBASE through the fins on the ATX heatsink.

****Heat Sink w/ fan** - Heat Sink that can be attached to the **Pentium® II processor** with metal clip.

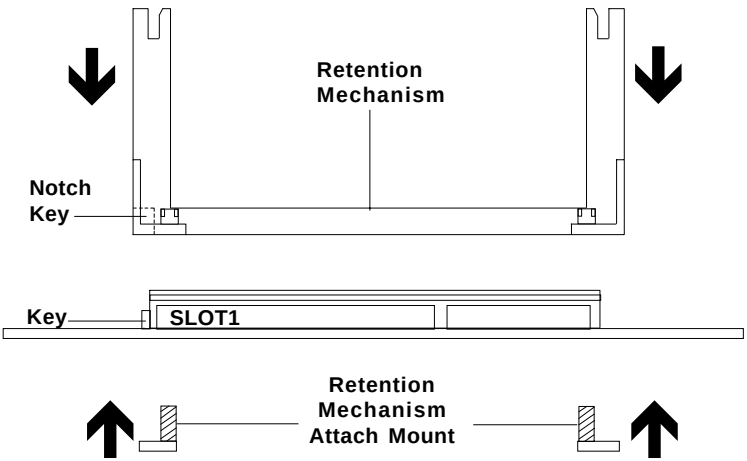
**Note:** * Provided by MSI mainboard.
** Provided by Special request.



**Step 1:** Insert the Retention Mechanism Attach Mount at the bottom of the mainboard.

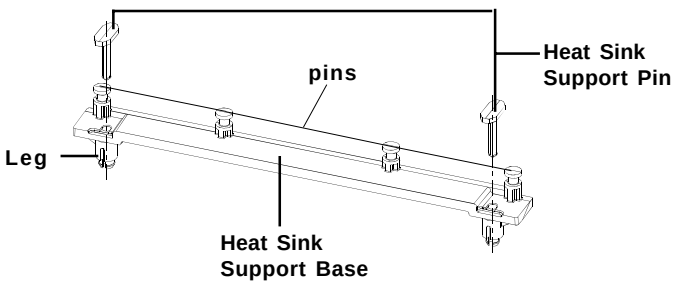
**Step 2:** Install the Retention Mechanism.

Look for the key on Slot 1, and match it with the Notch Key on the Retention Mechanism for proper direction. Then, attach the Retention Mechanism to the Retention Mechanism Attach Mount. Use a Screwdriver to secure the Retention Mechanism.



**Step 3:** Install the Heat Sink Support Base.

Look for the Two holes across Slot 1, and match it with the Two legs of the Heat Sink Support Base for the proper direction. Take note that one hole/leg is bigger than the other. The Four top pins of the Heat Sink Support Base should also be oriented towards Slot 1.



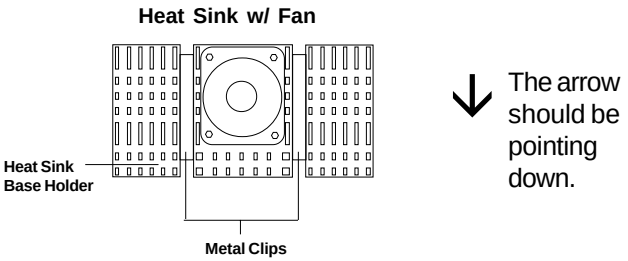

Push the Heat Sink Support Base onto the mainboard, until you hear a click sound. Check for a perfect fit.

**Step 4:** Install the Heat Sink Support Pin.

Push the Heat Sink Support Pins onto the two holes of the Heat Sink Support Base. Check for a perfect fit. These pins are used to secure the Heat Sink Support Base.

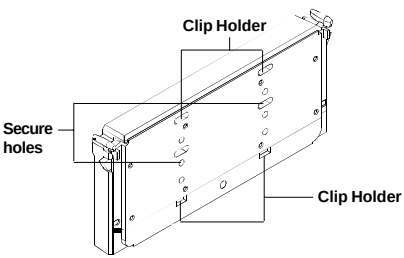
**Step 5:** Install the Heat Sink with Fan to the Processor.

Push down the metal clips, so that they are in line with the back of the Heat Sink. Be careful, so as not detach the metal clips from the Heat Sink.

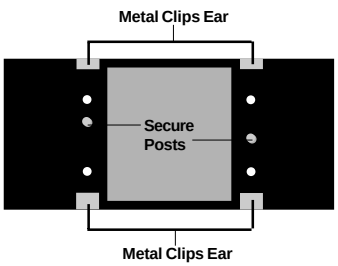



In case the metal clips are detached from the Heat Sink, re-attach them. Look for the arrow on the metal clip. This arrow should be pointing down and aligned with the Heat Sink Support Base Holder.

Attach the Heat Sink to the processor.




Pentium® II Processor (Back)




Heat Sink w/ Fan(Back)

- Look at the back of the Heat Sink and take note of the 2 secure posts. Insert these 2 Secure posts to the 2 secure holes on the back of the processor.

- Align the ears of the metal clips with the clip holders on the back of the processor. Use a screw driver to push the metal clips onto the clip holders. Check for a perfect fit.

**Step 6:** Install the Processor.

Unlock the Processor by pushing in the Processor Locks.

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

**Step 7:** Lock the Processor Locks.

Secure the CPU by pulling the Processor Locks out.

**Step 8:** Install the Heat Sink Support Top Bar.

Push the Heat Sink Support Top Bar to the Heat Sink Support Base, Until you hear a “click” sound. Check for a perfect fit.


The installation is now complete.

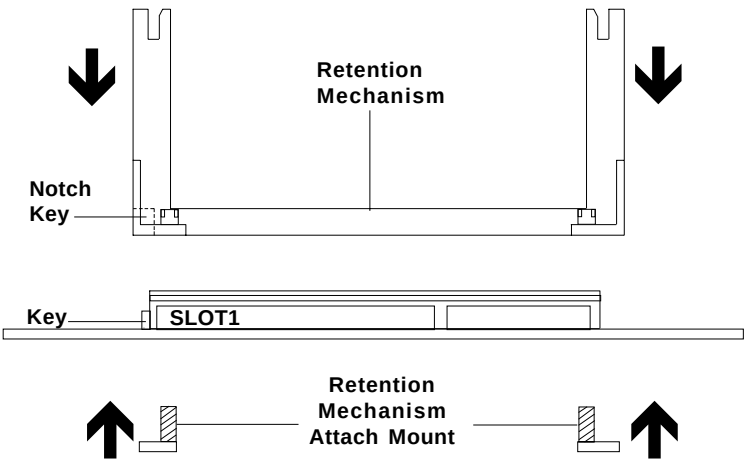
## B. Boxed Pentium® II Processor Installation Procedures

The Boxed Pentium® II Processor has a built- in Fan and Heat Sink. It also has a Heat Sink Support. So if you're going to use a Boxed Pentium™ II Processor, all you need is the Retention Mechanism.

**Step 1:** Insert the Retention Mechanism Attach Mount at the bottom of the mainboard.

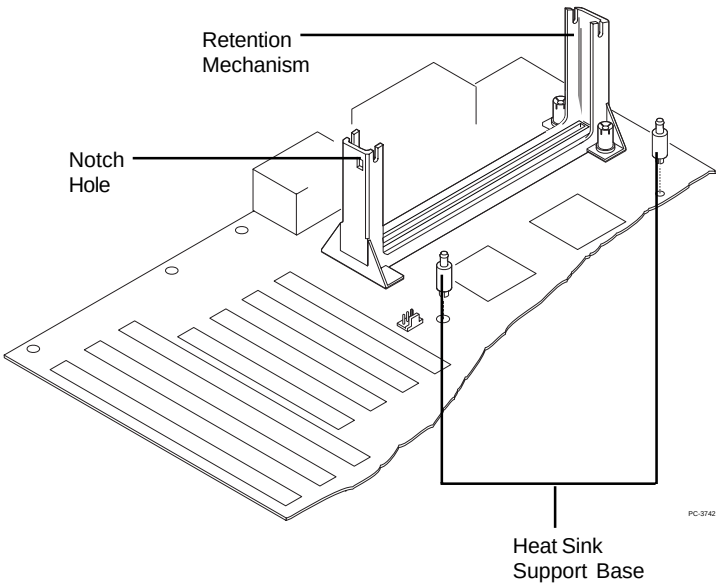
**Step 2:** Install the Retention Mechanism.

Look for the key on Slot 1, and match it with the Notch Key on the Retention Mechanism for proper direction. Then, attach the Retention Mechanism to the Retention Mechanism Attach Mount. Use a Screwdriver to secure the Retention Mechanism.



**Step 3:** Install the Heat Sink Support Base.

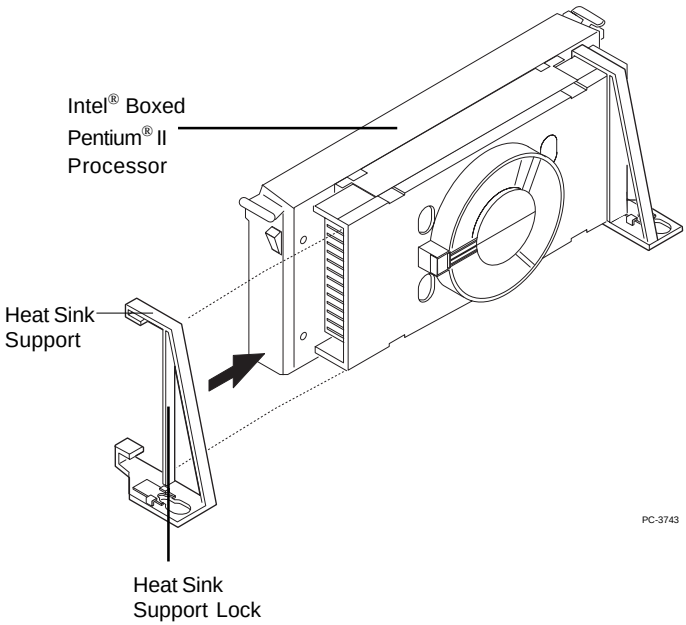
Look for the 2 holes across Slot 1, and match it with the 2 Heat Sink Support Base. Take note that one hole/base is bigger than the other.




Push the Heat Sink Support Base onto the mainboard, until you hear a click sound. Check for a perfect fit.

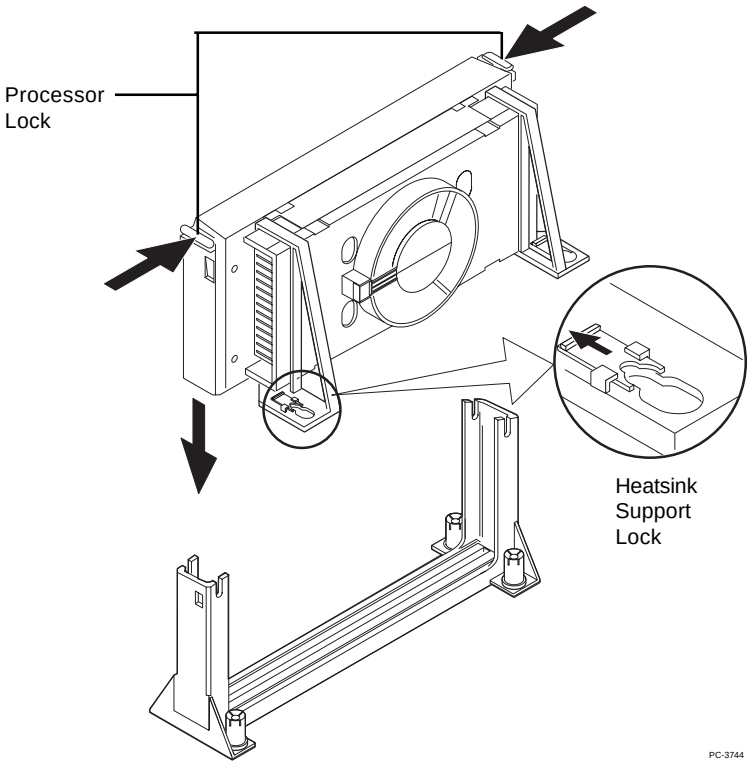
**Step 4:** Install the Heat Sink Support.

Attach the 2 Heat Sink Supports to the sides of the Processor. These Heat Sink Supports will fit in any direction, so be sure that the Heat Sink Support Locks are oriented outwards for the proper direction.

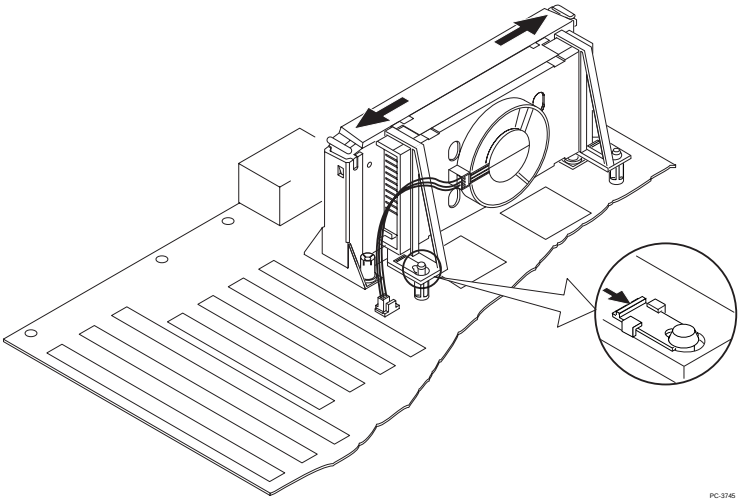


**Step 5:** Unlock the Processor Locks and Heat Sink Support Locks.

Push in the Processor Locks. Open the Heat Sink Support Locks.




**Step 6:** Insert the Processor like inserting a PCI or an ISA card.




**Step 7:** Lock the Processor Locks and Heat Sink Support Locks

Secure the CPU by pushing out the Processor Locks. Close the Heat Sink Support Locks.

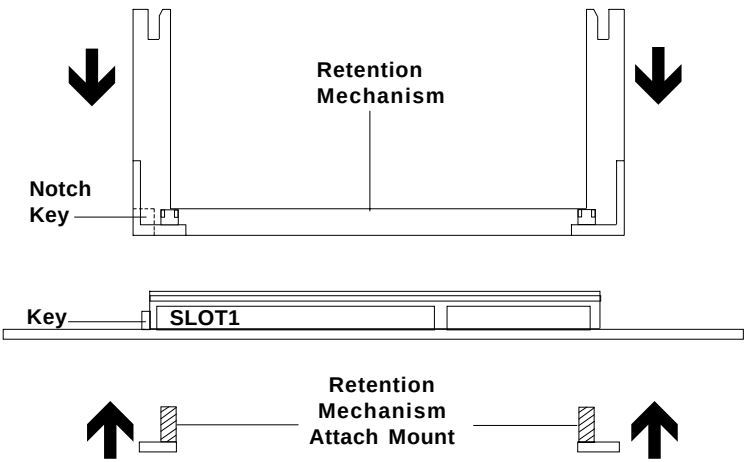
The installation is now complete.

## C. OEM Celeron™ Processor Installation Procedures

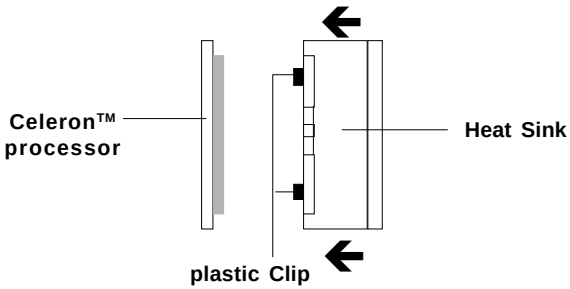
**Step 1:** Insert the Retention Mechanism Attach Mount at the bottom of the mainboard.

**Step 2:** Install the Retention Mechanism.

Look for the key on Slot 1, and match it with the Notch Key on the Retention Mechanism for proper direction. Then, attach the Retention Mechanism to the Retention Mechanism Attach Mount. Use a Screwdriver to secure the Retention Mechanism.



**Step 3:** Install the Heat Sink to the Processor.

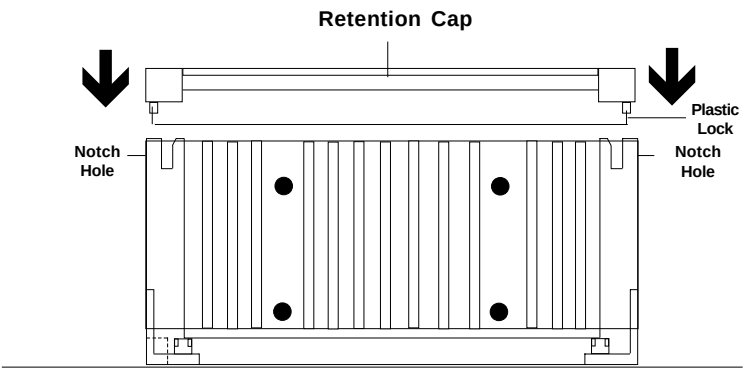



Push down the plastic clips, so that they are in line with the hole on the processor. Check for perfect fit.

**Step 4:** Install the Processor.

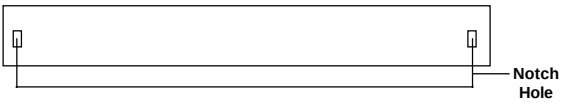
Insert the Processor like inserting a PCI or an ISA card.

**Step 5:** Lock the Procesoor




Lock the processor by putting the Retention Cap provided. Take note of the two plastic lock at the side of the Retention Cap. This two plastic lock should be aligned properly into the Retention Mechanism notch hole.

**Procedure for detaching the Retention Cap:**




**Retention Cap**
**(Top View)**

To remove the Retention Cap, you need a Screw Driver (0.3 cm) tip.
- Insert the screw driver into the retention cap notch hole.
- Push the retention cap plastic cap inward.
- Pull the retention cap upward.

## 2.1-2 CPU Core Speed Derivation Procedure

1. The DIP Switch SW1 (1, 2, 3, and 4) is used to set the Core/Bus (Fraction) ratio of the CPU. The actual core speed of the CPU is the Host Clock Frequency multiplied by the Core/Bus ratio. For example:

| | | | |
|---|---|---|---|
| **If** | CPU Clock | = | 66MHz |
| | Core/Bus ratio | = | 3.5 |
| **then** | CPU core speed | = | Host Clock x Core/Bus ratio |
| | | = | 66MHz x 3.5 |
| | | = | 233MHz |

| SW1 | | | | CPU |
|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **Core/Bus Ratio** |
| ON | OFF | ON | ON | 2.5 |
| ON | ON | OFF | ON | 3 |
| ON | OFF | OFF | ON | 3.5 |
| ON | ON | ON | OFF | 4 |
| ON | OFF | ON | OFF | 4.5 |
| ON | ON | OFF | OFF | 5 |
| ON | OFF | OFF | OFF | 5.5 |
| OFF | ON | ON | ON | 6 |
| OFF | OFF | ON | ON | 6.5 |
| OFF | ON | OFF | ON | 7 |
| OFF | OFF | OFF | ON | 7.5 |
| OFF | ON | ON | OFF | 8 |

**Note:** a. The **CPU Bus Frequency** is set at 66MHz or 100MHz by CPU default.
b. If the mainboard support **CPU Plug & Play**, disregard this table and go directly to BIOS **Special Features Setup** to set the CPU speed.

2. The PCI Bus Clock is fixed at 33MHz.

## 2.1-3 CPU Speed Setting

To adjust the speed of the CPU, you must know the specification of your CPU (*always ask the vendor for CPU specification*).

**a. 66MHz CPU Bus Frequency**

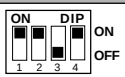
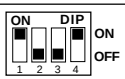
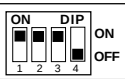
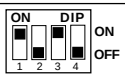
| CPU Type | SW1 |
|---|---|
| 200MHz |  |
| 233MHz |  |
| 266MHz |  |
| 300MHz |  |
| 333MHz |  |



Table 2.0 200 ~ 333MHz Intel® Pentium® II processor

**b. 100MHz CPU Bus Frequency**

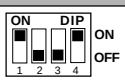
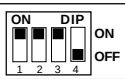
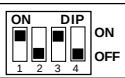
| CPU Type | SW1 |
|---|---|
| 350MHz |  |
| 400MHz |  |
| 450MHz |  |



Table 2.1 350 ~ 450MHz Intel® Pentium® II processor

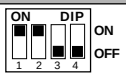
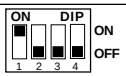
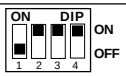
| CPU Type | SW1 |
|---|---|
| 500MHz |  |
| 550MHz |  |
| 600MHz |  |



**Table 2.2 350 ~ 600MHz Intel® Pentium® III Katmai processor**

### c. 100MHz CPU Bus Frequency

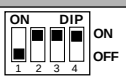
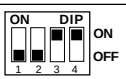
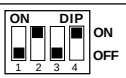
| CPU Type | SW1 |
|---|---|
| 600MHz (100MHz) |  |
| 650MHz (100MHz) |  |
| 700MHz (100MHz) |  |

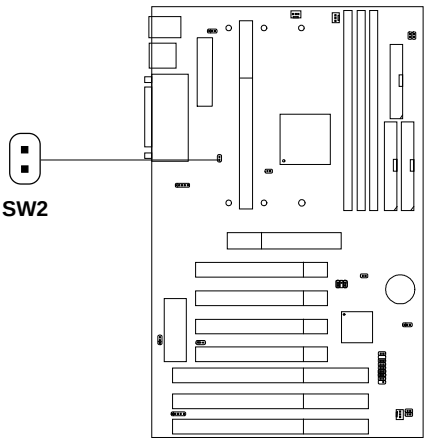


**Table 2.3 600 ~ 700MHz Intel® Pentium III Coppermine processor**

**Note:** Intel BX/ZX chipset support a maximum (FSB)Front Side Bus of 100MHz . But the chipset can still support processor with 133MHz FSB like: 533/600/667/733MHz. These 133MHz FSB processor will still function, but as a 100MHz FSB processor. For instance: 533MHz processor should be set as 100 x 5 or 100 x 5.5.

## 2.1-4 CPU Bus Frequency Selector: SW2

The SW2 is used to set the CPU Bus Frequencies from 66MHz to 100MHz. When SW2 is shorted, this will automatically detect the CPU Bus Frequency. When SW2 is open, if you used 66MHz CPU Bus Frequency, this will set it Virtually into 100MHz.




| SW2 | Feature |
|---|---|
|  | Automatically detect 66MHz and 100MHz CPU Bus Frequency |
|  | Virtually set 66MHz CPU Bus Frequency into 100MHz |

## For CPU Plug & Play Mainboard only:

There's another way to set the CPU Bus Frequency, through the BIOS Setup. But setting it through BIOS or jumper will produce different AGP clock.

There are two formulas for setting the AGP clock:

| Formula | Equation |
|---|---|
| **A** | AGP clock = CPU Bus Frequency * 2/3 |
| **B** | AGP clock = CPU Bus Frequency * 1 |

Before you use this two formula you have to know the situation first. Refer to the chart below:

| SW2 | BIOS | CPU | Formula |
|---|---|---|---|
| Shorted | 100MHz | 100MHz | A |
| | 100MHz | 66MHz | B |
| Open | 100MHz | 66MHz | A |

**SW2** is CPU Bus Frequency Selector, **BIOS** is the BIOS CPU Bus Frequency selector, **CPU** is the processor FSB, and **Formula** is selecting which formula to use for this certain situation.

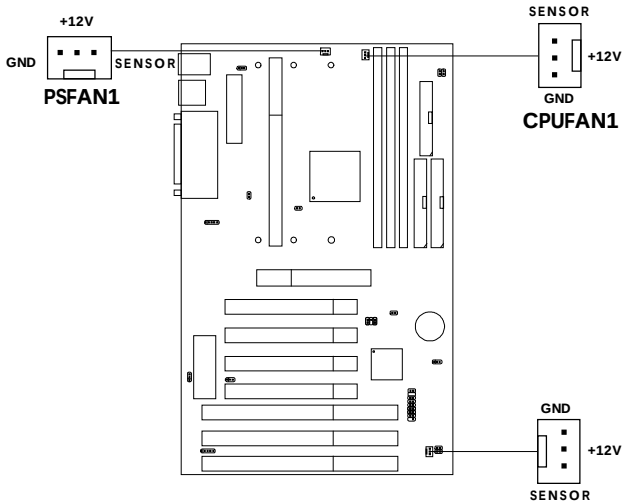
**For Example:** If you use a 66MHz FSB processor with SW2 is shorted and BIOS set to 100MHz, then you need to use Formula B for calculating your AGP clock.

AGP clock = CPU Bus Frequency * 1
= 100MHz * 1
= 100MHz

**Note:** a. This formula only works with CPU Plug & Play Mainboard. If you used Mainboard with Jumper. CPU can only be set to 100MHz by SW2. AGP will only be set to 66MHz.
b. For CPU Plug & Play mainboard, when the AGP clock is set to 100MHz, it might produce unstable result.

## 2.1-5 Fan Power Connectors: CPUFAN1/PSFAN1/SYSFAN1

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 got Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of that.



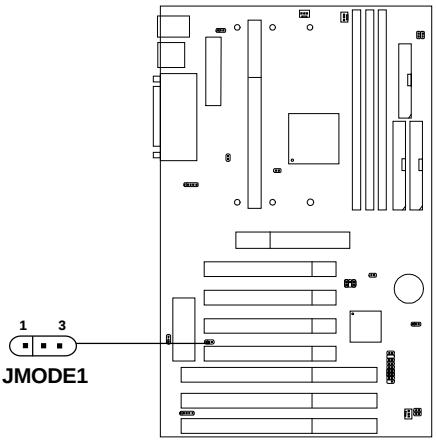

**PSFAN1** : Power Supply Fan
**CPUFAN1** : CPU Fan
**SYSFAN1** : System(Chassis) Fan

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. CPUFAN1/SYSFAN1/PSFAN1** are the CPU, Power and Chassis Cooling Fan Speed Connector (reserved for System Hardware Monitor Option.)
**2.** Always consult vendor for proper CPU cooling fan.

## 2.2 Flash ROM Programming Voltage: JMODE1

This jumper is for setting the voltage of the Flash ROM BIOS.

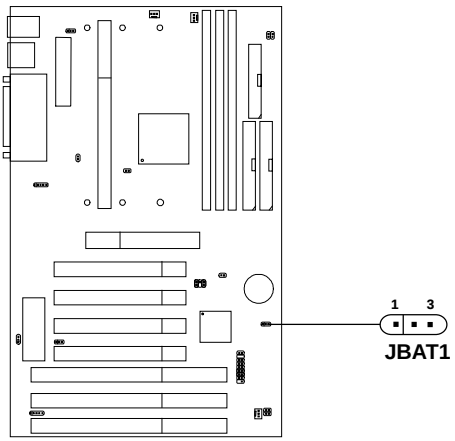



### Voltage Setting


**Note:** a. Short 1-2 pin, if you're using Intel® or MXIC flash memory and you want to flash the ROM data.
b. Open JMODE1, if you're using Winbond flash memory.

## 2.3 Clear CMOS Jumper: JBAT1

A battery must be used to retain the mainboard configuration in CMOS RAM. If you use the on-board battery, you must short 1-2 pins of JBAT1 to keep the CMOS data.





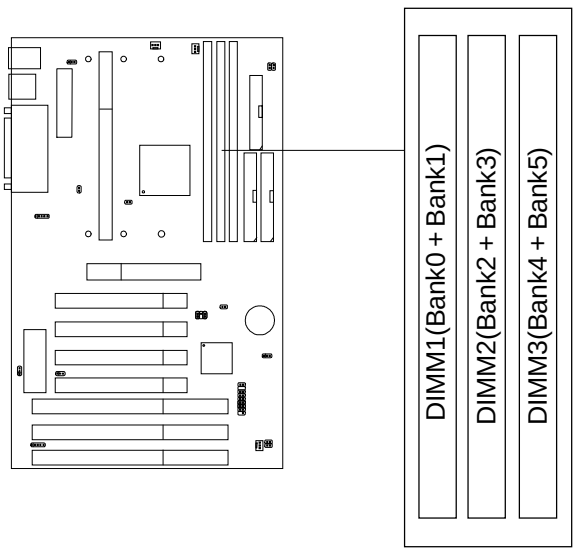
Keep Data Clear Data

**Note:** To short the CMOS data, turn off the system and unplug the power cord for about 10 seconds afterwhich, move jumper cap from pin 1-2 to 2-3 and back to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

## 2.4 Memory Installation

### 2.4-1 Memory Bank Configuration

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

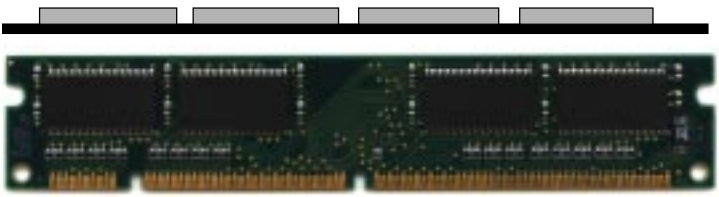



**WARNING!**

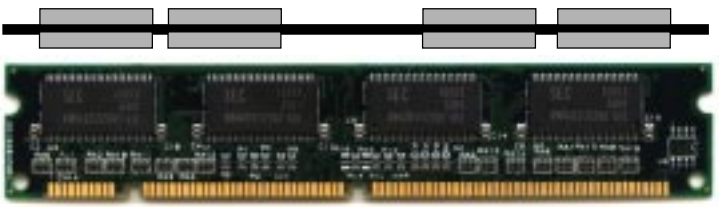
There are two kinds of DIMM specification supported by this mainboard: PC100 and PC66. If you use 66MHz CPU Bus Frequency, these two DIMM Specs. is supported. If you use 100 MHz CPU Bus Frequency, only PC100 DIMM Specs. is supported.

## 2.4-2 Memory Installation Procedures

### A. How to install a DIMM Module



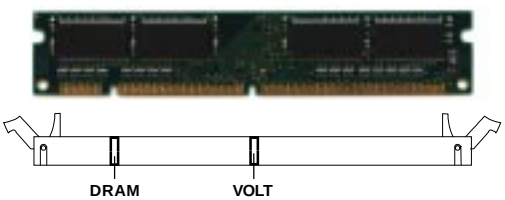
Single Sided DIMM



Double Sided DIMM

1. The DIMM slot has a two Notch Key “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.

**Note:** You can only use a 3.3 volt DIMM module (SDRAM).

## 2.4-3 Memory Population Rules

1. Supports SDRAM DIMM.

2. Supports **unbuffered** DIMM.

3. To operate properly, at least one 168-pin DIMM module must be installed.

4. This mainboard supports Table Free memory, so memory can be installed on DIMM1, DIMM2, or DIMM 3 in any order.

5. Supports 3.3 volt DIMM.

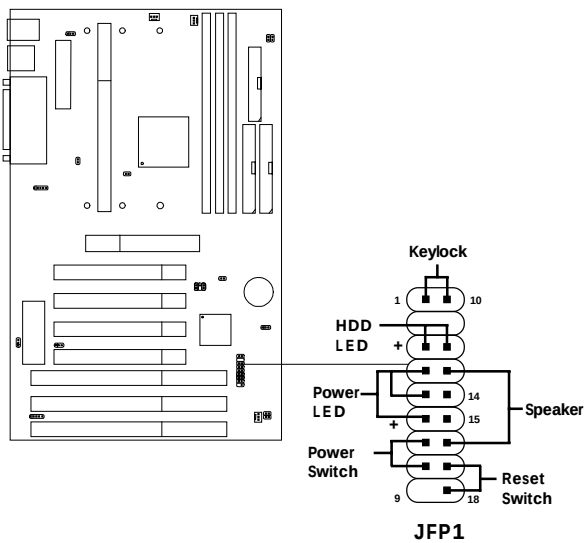
6. The DRAM addressing and the size supported by the mainboard is shown next page.

### Table 2.4-1 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 |

## 2.5 Case Connector: JFP1

The Power Switch, Reset Switch, Key Lock, Power LED, Speaker and HDD LED are all connected to the JFP1 connector block.



### 2.5-1 Power Switch

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

### 2.5-2 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.

### 2.5-3 Keylock

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

### 2.5-4 Power LED

The Power LED is always lit while the system power is on. You can connect the Power LED from the system case to this pin.

### 2.5-5 Speaker

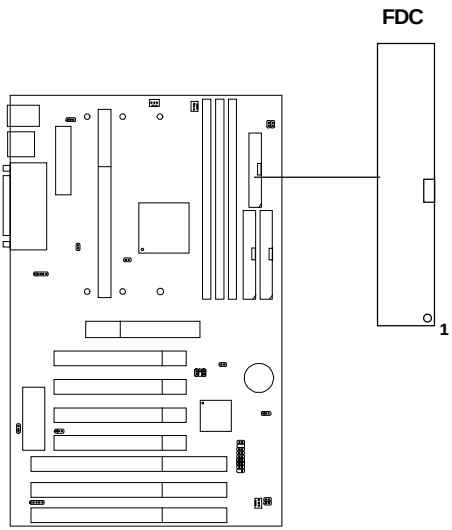
Speaker from the system case is connected to this pin.
If on-board speaker is available:
Short pin 14-15: On-board speaker Enabled.
Open pin 14-15: On-board speaker Disabled.

### 2.5-6 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.

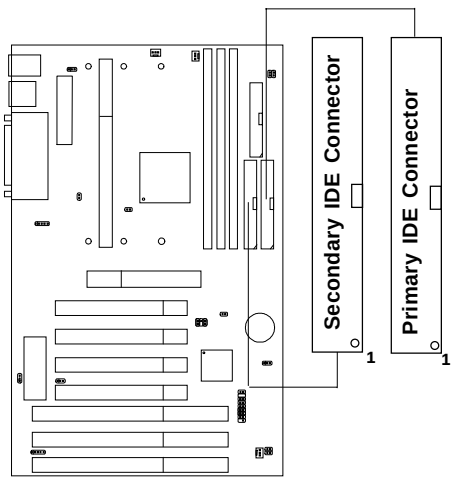
## 2.6 Floppy Disk Connector: FDC

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



## 2.7 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.

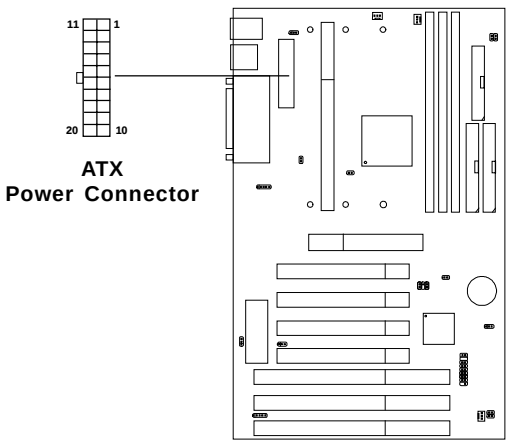
**IDE2**(Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.

# 2.8 Power Supply

## 2.8-1 ATX 20-pin Power Connector: JPWR1

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.



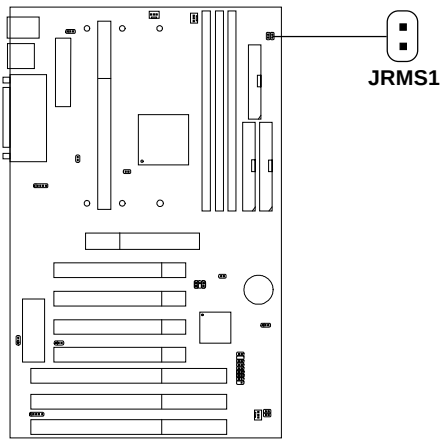

**PIN DEFINITION**

| PIN | SIGNAL | PIN | SIGNAL |
|---|---|---|---|
| 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.

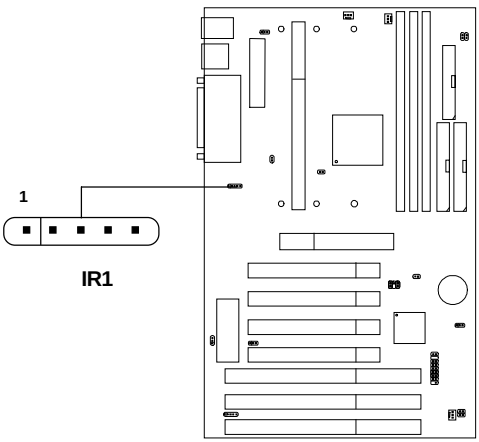
### 2.8-2 Remote Power On/Off Switch: JRMS1

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.



## 2.9 IrDA Infrared Module Connector: IR1

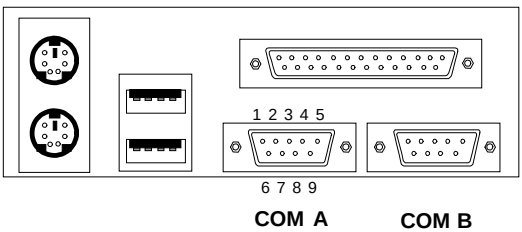
The mainboard provides one 5-pin infrared (IR1) connector for IR modules. This connector is for optional wireless transmitting and receiving infrared module. You must configure the setting through the BIOS setup to use the IR function. FIR and Consumer IR are reserved functions.




| Pin | Description |
|---|---|
| 1 | VCC |
| 2 | NC |
| 3 | IRRX |
| 4 | GND |
| 5 | IRTX |

## 2.10 Serial Port Connectors: COM A & COM B

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

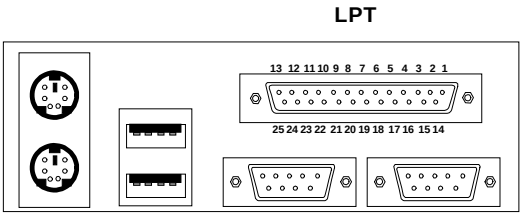



**PIN DEFINITION**

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

## 2.11 Parallel Port Connector: LPT

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:

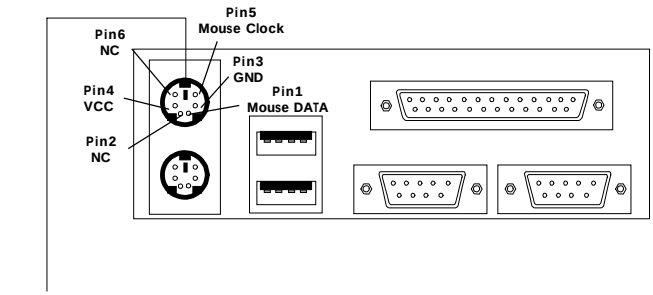



**PIN DEFINITION**

| 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 | | |

## 2.12 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:

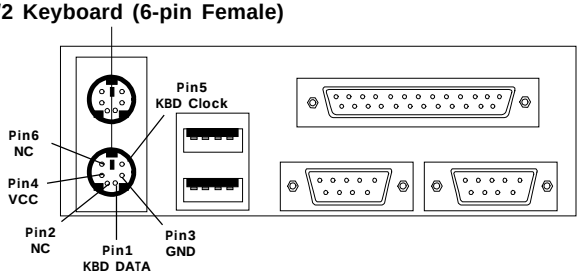



**PS/2 Mouse (6-pin Female)**

## 2.13 Keyboard Connector: JKBMS1

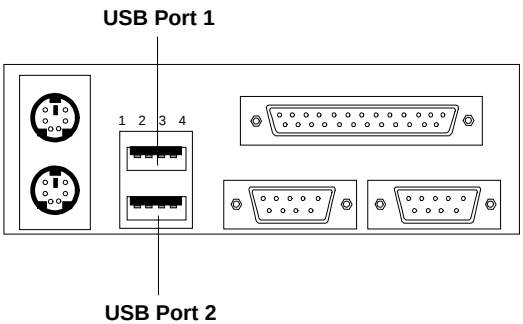
The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.

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



## 2.14 USB Connector: USB

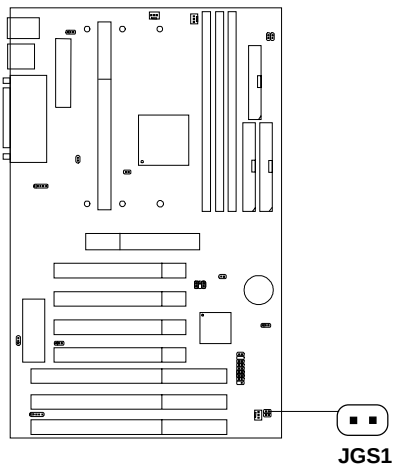
The mainboard provides a **UHCI(Universal Host Controller Interface) Universal Serial Bus root** for attaching USB devices like: keyboard, mouse and other USB devices. You can plug the USB device directly to this connector.




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

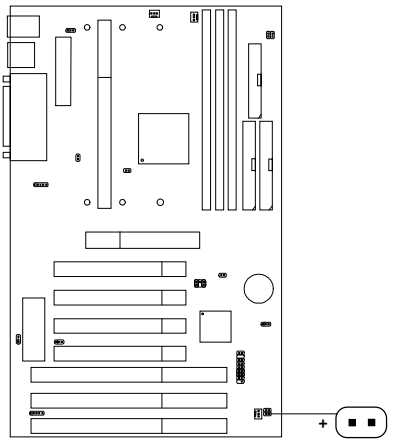
## 2.15 Power Saving Switch Connector: JGS1

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.



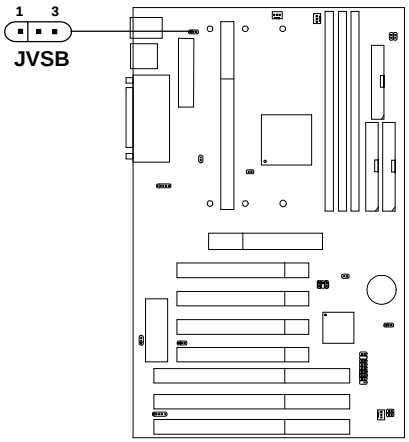
## 2.16 Power Saving LED Connector: JGL1

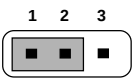
JGL1 can be connected with LED. This will lit while the system is in suspend mode.



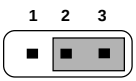
## 2.17 Keyboard Power: JVSB (reserved)

The JVSB jumper is for setting keyboard power. This function is provided by keyboard and PS/2 mouse Wake-up function.




5V_Standby




5V
(default)

## 2.18 Power On Mode Jumper: JP1

The mainboard supports two kinds of system boot up: the Boot-Up by switch and the Immediate Boot-Up. With the Boot-Up by Switch, the system will boot up only when the power on switch is pressed. For Immediate Boot-Up, the system will boot up instantly when the power connector is connected into the system.

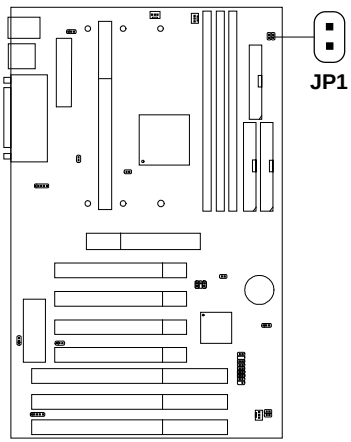
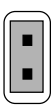
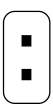


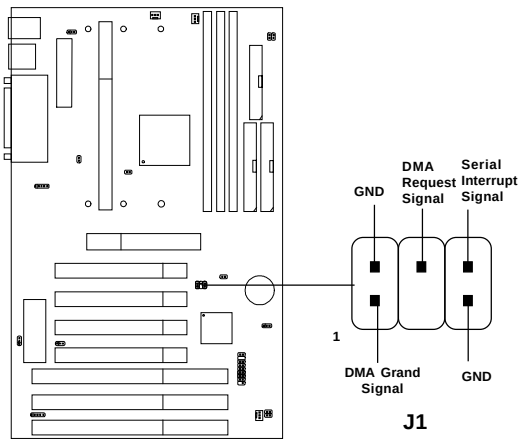

**Table 2.18: Power On Mode Feature**

| JP1 | Feature |
|---|---|
|  | Select Boot-Up by Switch |
|  | Select Immediate Boot-Up |

**Note:** Short **JP1**, when using Boot-Up by Switch feature. Open **JP1**, to enable Immediate Boot-Up.

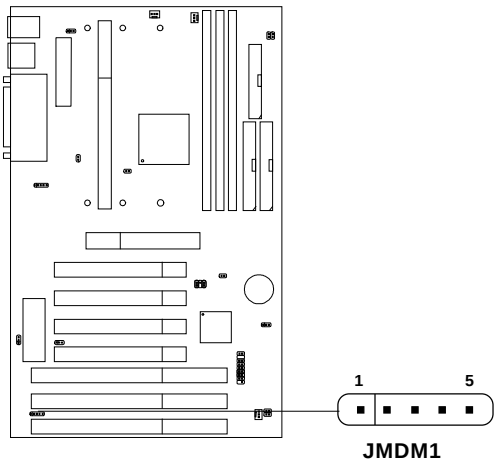
## 2.19 SB_Link™ Card Sound Connector: J1

The mainboard provides a distributed DMA connector for PCI sound card with this feature, such as Creative® PCI 3D sound card.



## 2.20 Modem Wake Up Connector: JMDM1

The JMDM1 connector is for used with Modem add-on card that supports the Modem Wake Up function.



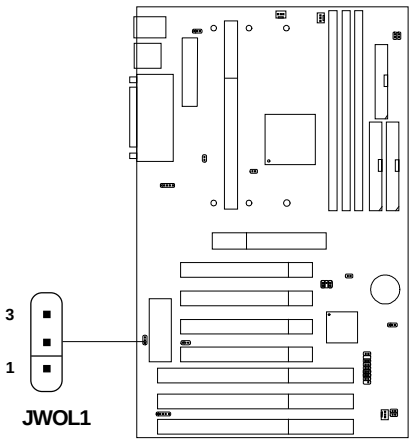

| PIN | SIGNAL |
|---|---|
| 1 | NC |
| 2 | GND |
| 3 | MDM_WAKEUP |
| 4 | NC |
| 5 | 5VSB |

**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.
(750 ma power supply with 5V Stand-by)

## 2.21 Wake-Up on LAN Connector: JWOL1

The JWOL1 connector is for use with LAN add-on cards that supports Wake Up on LAN function.



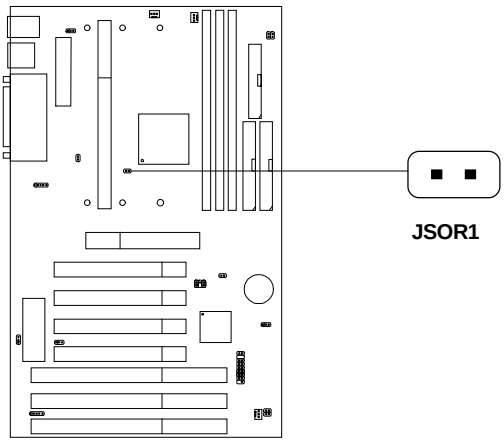

| PIN | SIGNAL |
|---|---|
| 1 | 5VSB |
| 2 | GND |
| 3 | MP_WAKEUP |

**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.
(750 ma power supply with 5V Stand-by)

## 2.22 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.



## 2.23 Chassis Intrusion Connector: J2

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 settting and clear the status.