Introduction

1

The MS-6523 ATX mainboard is a high-performance computer mainboard based on Intel® 82850 chipset. The MS-6523 is optimized to support the Intel® Pentium® 4 processor for high-end business/personal desktop markets.

The Intel® Tehama chipset supports 64B cache line size and a 32-bit host addressing, allowing the processor to access the entire 4GB of the chipset's memory address space. It also provides 4x AGP data transfers and AGP Fast Writes capability.

The Intel® Tehama chipset features a dual channel Direct RDRAM memory operating in lock-step using RSL technology. It is a highly-flexible chipset which is designed to extend the basic graphics/multimedia PC platform up to the mainstream performance desktop platform.

The Intel® 82801BA (ICH2) chipset is a highly integrated multifunctional I/O Controller Hub that provides the interface to the PCI Bus and integrates many of the functions needed in today's PC platforms. It communicates with the host controller over a dedicated hub interface and provides added flexibility in designing cost-effective system solutions.

This chapter includes the following topics:

Mainboard Specification

CPU
- Supports Intel® Willamette processor
- Supports 1.3GHz, 1.4GHz, 1.5GHz, 1.7GHz, 2.0GHz or faster

Chipset
- Intel® Tehama chipset
  - Up to 2GB maximum memory (Rambus)
  - AGP interface with 4x SBA/Data Transfer
- Intel® ICH2 chipset
  - AC'97 Controller Integrated
  - 2 Full IDE channels, up to ATA100
  - Low pin count interface for SIO

Main Memory
- Supports four 184-pin gold-lead RIMM sockets
- Supports a maximum memory size of 2GB

Slots
- One AGP (Accelerated Graphics Port) slot
  - supports 4x mode
- One CNR (Communication Network Riser) slot
- Four 32-bit/33MHz Master PCI Bus slots.
- Supports 3.3v/5v PCI bus Interface

On-Board IDE
- An IDE controller on the Intel® ICH2 chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA 33/66/100 operation modes.
- Can connect up to four IDE devices

Integrated Super I/O Controller
- Winbond W83627HF-AW I/O controller
  - 1 floppy port supports 2 FDDs with 360K, 720K, 1.2M, 1.44M and 2.88M bytes.
  - 2 serial ports (COM A + COM B)
  - 1 parallel port supports SPP/EPP/ECP mode
  - 4 USB ports (Rear*2 / Front*2)

- 1 IrDA connector for SIR

Audio
- ICH2 chip integrated
- AC'97 Codec

BIOS
- The mainboard BIOS provides "Plug & Play" BIOS which detects the peripheral devices and expansion cards of the board automatically.
- IDE drive auto configure, Advanced Power Management (APM) 1.2, ACPI 1.0, DMI 2.0, ECC/Parity support, LS-120 support.
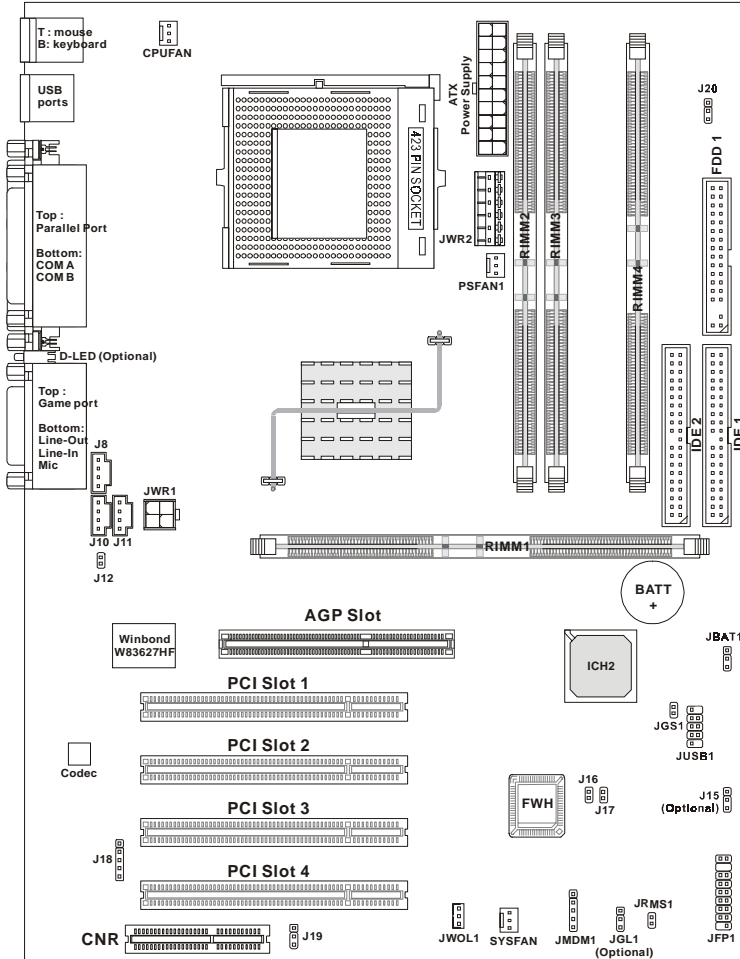
Dimension
- ATX Form Factor : 12 inches (L) x 9 inches (W) x 4 layers PCB

Mounting
- 10 mounting holes

Mainboard Layout

MS-6523 ATX Mainboard

Quick Components Guide

Component	Function	Reference
RIMM1~4	Installing RIMM modules	See p. 2-4~2-5
Socket 423	Installing CPU	See p. 2-2~2-3
CPUFAN	Connecting to CPU FAN	See p. 2-20
SYSFAN	Connecting to SYSTEM FAN	See p. 2-20
PSFAN1	Connecting to POWER SUPPLY FAN	See p. 2-20
ATX Power Supply	Installing power supply	See p. 2-6
JWR1	Connecting to 12V ATX power supply	See p. 2-7
JWR2	Connecting to 5V/3V ATX power supply	See p. 2-7
IDE1& IDE2	Connecting to IDE hard disk drives	See p. 2-13
FDD1	Connecting to floppy disk drive	See p. 2-12
JUSB1	Connecting to USB interfaces	See p. 2-22~2-24
PCI Slot 1~4	Installing expansion cards	See p. 2-30
AGP Slot	Installing AGP cards	See p. 2-30
CNR Slot	Installing CNR cards	See p. 2-30
JMDM1	Connecting to modem module	See p. 2-18
JWOL1	Connecting to LAN module	See p. 2-18
JBAT1	Clearing CMOS data	See p. 2-25
JFP1	Connecting to case	See p. 2-14
JGS1	Connecting to power saving switch	See p. 2-17
JGL1	Connecting to power saving LED	See p. 2-16
J18	Connecting to IR module	See p. 2-19
J12	Connecting to chassis intrusion switch	See p. 2-19
JRMS1	Connecting to power switch	See p. 2-17
J15	Setting beep output device	See p. 2-29
J16	Enabling BIOS flash function	See p. 2-28
J17	Clearing BIOS password	See p. 2-28
J19	Enabling onboard audio codec	See p. 2-27
J20	Setting RDRAM voltage	See p. 2-26

Key Features

- ATX Form Factor
- CPU: Socket 423 for Intel® Willamette Processors
- Memory: 4 RIMM DIMMs
- Slot: 1 AGP slot, 1 CNR slot, 4 PCI slots
- I/O: 2 serial ports, 1 parallel port, 4 USB 1.1 ports, 1 floppy port, 1 IrDA connector, 1 Audio/Game port
- USB Interface: USB 1.1 PC to PC Networking (Optional)
- LAN Wake up Function
- Modem (External/Internal) Ring Wake up Function
- D-LED™ -- 4 Diagnostics LEDs embedded on the mainboard (Optional)
- PC Alert™ III system hardware monitor (Optional)
- Audio: Chip integrated

MSI Special Features

The MSI special features are designed by MSI R&D which are only available in MSI mainboards. The MS-6523 mainboard is **optionally** equipped with PC Alert™ III and D-LED™.

PC Alert™ III (Optional)

The PC Alert™ III is a utility you can find in the CD-ROM disk. The utility is just like your PC doctor that can detect the following PC hardware status during real time operation:

   * monitor CPU & system temperatures
   * monitor fan speed(s)
   * monitor system voltage
   * monitor chassis intrusion

If one of the items above is abnormal, the program main screen will be immediately shown on the screen, with the abnormal item highlighted in red. This will continue to be shown, until user disables the warning.

Note: Items shown on PC Alert III vary depending on your system's status.

Features:
- Network Management
  - Monitoring & remote control
- Basic System Utilities
  - Scandisk & Defragment to maintain your HDD
- 3D Graphics Design
  - Enables a more friendly user interface
- Sofware Utilities
  - SoftCooler Optimized Cooling

D-LED™ (Optional)

The D-LED™ uses graphic signal display to help users understand their system. Four LEDs embedded in the mainboard provide up to 16 combinations of signals to debug the system. The 4 LEDs can debug all problems that fail the system, such as VGA, RAM or other failures. This special feature is very useful for the overclocking users. These users can use the feature to detect if there are any problems or failures.

4
3
2
1
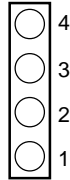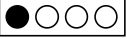
Diagnostic LED

● **Red**   ○ **Green**

D-LED	Description
1 2 3 4 ● ● ● ●	System Power ON - The D-LED will hang here if the processor is damaged or not installed properly.
○ ● ● ●	Early Chipset Initialization
● ○ ● ●	Memory Detection Test - Testing onboard memory size. The D-LED will hang if the memory module is damaged or not installed properly.
○ ○ ● ●	Decompressing BIOS image to RAM for fast booting.
● ● ○ ●	Initializing Keyboard Controller.
○ ● ○ ●	Testing VGA BIOS - This will start writing VGA sign-on message to the screen.

●○○●	Processor Initialization - This will show information regarding the processor (like brand name, system bus, etc…)
○○○●	Testing RTC (Real Time Clock)
●●●○	Initializing Video Interface - This will start detecting CPU clock, checking type of video onboard. Then, detect and initialize the video adapter.
○●●○	BIOS Sign On - This will start showing information about logo, processor brand name, etc….
●○●○	Testing Base and Extended Memory - Testing base memory from 240K to 640K and extended memory above 1MB using various patterns.
○○●○	Assign Resources to all ISA.
●●○○	Initializing Hard Drive Controller - This will initialize IDE drive and controller.
○●○○	Initializing Floppy Drive Controller - This will initializing Floppy Drive and controller.
●○○○	Boot Attempt - This will set low stack and boot via INT 19h.
○○○○	Operating System Booting