Cheatography

The Motherboard Cheat Sheet

by Yokiono via cheatography.com/204027/cs/43478/

Overview

The motherboard is basically the main circuit board inside your computer. It's kind of like the central nervous system, connecting all the important parts together. Here's what it does:

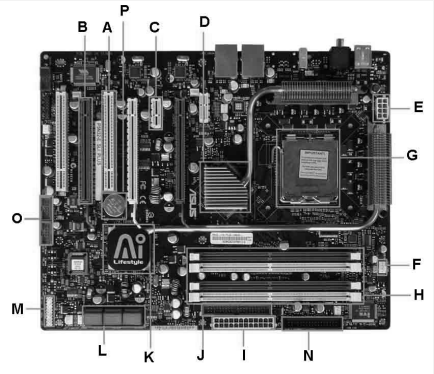
Connects everything: The CPU (central processing unit), graphics card, memory (RAM), storage drives (hard drive and SSD) and other devices all plug into the motherboard.

Talks to everything: The motherboard allows all these parts to communicate with each other and share information.

Provides power: The motherboard supplies power to all the other components.

Special features: Some motherboards also have built-in Wi-Fi, Bluetooth, or special slots for extra video cards.

DIAGRAM



Parts & Functions

Parts & Functions (cont)

H : ***Memory Slots*** - These are the slots for your RAM. Most boards will have 4 slots, but some will only have 2. The color coding you see on the motherboard diagram is used to match up RAM for Dual-Channel. Using them this way will give your memory a speed boost.

I : ***ATX Power Connector*** - This is the second of two power connections. This is the main power connection for the motherboard, and comes from the Power Supply.

J : ***IDE Connection*** - The IDE (Integrated Drive Electronics) is the connection for your hard drive or CD / DVD drive. Most drives today come with SATA connections, so you may not use this.

K : ***Southbridge*** - This is the controller for components such as the PCI slots, onboard audio, and USB connections.

L : ***SATA Connections*** - These are 4 of the 6 SATA connections on the motherboard. These will be used for hard drives, and CD / DVD drives.

M : ***Front Panel Connections*** - this is where you will hook in the connections from your case. These are mostly the different lights on your case, such as power on, hard drive activity etc.

N : ***FDD Connection*** - The FDD is the Floppy Disk controller. If you have a floppy disk drive in your computer, this is where you will hook it up.

O : ***External USB Connections*** - This is where you will plug in external USB connections for your case or USB bracket.

P : ***CMOS battery*** - This is the motherboard's battery. This is used to allow the CMOS to keep its settings.

IMPORTANT THINGS TO REMEMBER

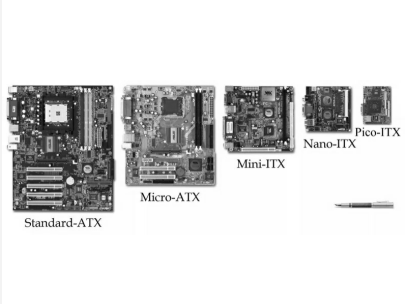
IMPORTANT THINGS TO REMEMBER (cont)

Cores and Threads: A CPU core is like a mini-processor that can handle instructions. Modern CPUs typically have multiple cores, allowing them to process multiple instructions at the same time. Threads are a type of software construct that allows a single core to handle multiple tasks at the same time. A CPU with hyperthreading technology can create two threads per core, which can improve performance for certain types of workloads.

Bit Architecture: This refers to the amount of data a CPU can process at a time. Most CPUs today are 64-bit, which means they can handle 64 bits of data at a time. 32-bit CPUs are still around, but they are not as common. A 64-bit CPU can address a much larger amount of memory than a 32-bit CPU.

Cache: Cache is a small amount of very fast memory that is located on the CPU itself. The CPU can access data from cache much faster than it can access data from main memory (RAM). There are different levels of cache, with L1 cache being the smallest and fastest, and L3 cache being the largest and slowest.

COMMON FORM FACTORS



FORM FACTOR COMPARRISON

A : ***PCI Slot*** - This board has 2 PCI slots. These can be used for components such as Ethernet cards, sound cards, and modems.

B : ***PCI-E 16x Slot*** - There are 2 of them on this motherboard diagram, both are blue. These are used for your graphics card. With two of them onboard, you can run 2 graphics cards in SLI. You would only need this if you are a gamer, or working with high end video / graphics editing. These are the 16x speed versions, which are currently the fastest.

C : ***PCI-E 1x Slot*** - Single slot - In the PCIe 1.x generation, each lane (1x) carries 250 MB/s compared to 133 MB/s for the PCI slots. These can be used for expansion cards such as Sound Cards, or Ethernet Cards.

D : ***Northbridge*** - This is the Northbridge for this motherboard. This allows communication between the CPU and the system memory and PCI-E slots.

E : ***TX 12V 2X and 4 Pin Power Connection*** - Power Connection - This is one of two power connections that supply power to the motherboard. This connection will come from your Power Supply.

F : ***CPU Fan Connection*** - his is where your CPU fan will connect. Using this connection over one from your power supply will allow the motherboard to control the speed of your fan, based on the CPU temperature.

G : ***Socket*** - This is where your CPU will plug in. The orange bracket that is surrounding it is used for high end heat sinks. It helps to support the weight of the heat sink.

Clock Speed: *Measured in gigahertz (GHz)*, it refers to the number of cycles a CPU can complete in one second. Higher clock speeds generally indicate faster performance. However, clock speed is just one factor to consider, and modern CPUs have many other features that can affect performance.

Form Factor	Manufacturer/Date	Dimensions	Applications
Standard-ATX	Intel 1995	12 × 9.6in	Workstation/Desktop
Micro-ATX	Intel 1997	9.6 × 9.6 in	Small Form Factor
Mini-ITX	VIA 2001	6.7 × 6.7 in	Small Form Factor
Nano-ITX	VIA 2003	4.7 × 4.7 in	Embedded Systems
Pico-ITX	VIA 2007	3.9 × 2.8 in	Embedded Systems
Mobile-ITX	VIA 2009	2.4 × 2.4 in	Embedded Systems

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