COMPARATIVE STUDY

ON DIFFERENT TYPES OF MOTHERBOARDS

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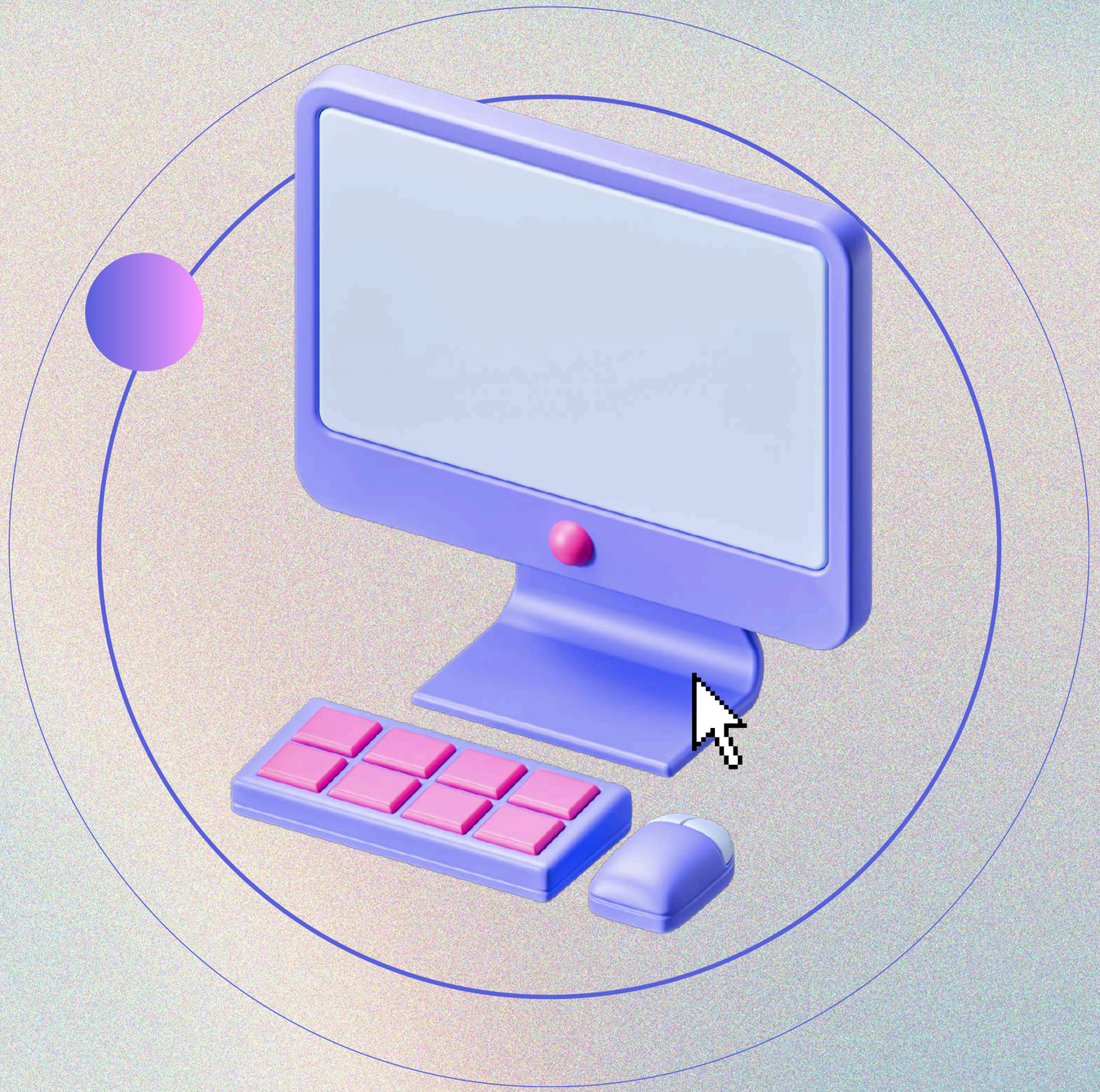


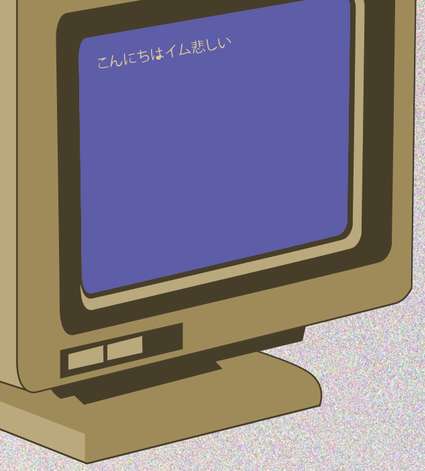
MOTHERBOARD

What is it?

A motherboard is the main circuit board in a computer system. It connects all of the internal components, like the memory, processor, graphics card and other hardware. It also provides power to each component and allows them to communicate with each other. The motherboard is a key part of any computer, and its importance cannot be overstated.

How does it work?

The motherboard is essentially responsible for connecting all the different components inside of a computer together. It has connectors for just about every type of component, from RAM to USB ports. By connecting these components together, it allows them to communicate with one another so that your computer can do what you want it to do.



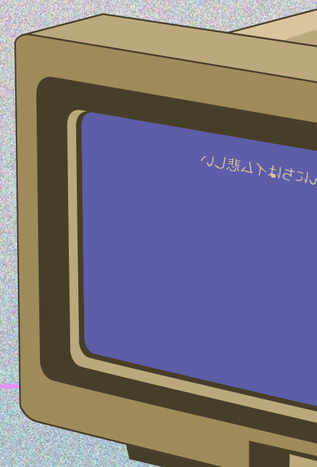
Why are there different types of

MOTHERBOARD?

Each component is specifically designed to fit a certain size and design specifications in the hardware world

There are 10 types of Motherboard

- *AT Motherboard*
- *ATX Motherboard*
- *BTX Motherboard*
- *Extended-ATX Motherboard*
- *LPX Motherboard*
- *Micro-ATX Motherboard*
- *Mini ITX Motherboard*
- *Mini-ATX Motherboard*
- *Pico BTX Motherboard*
- *Standard-ATX Motherboard*



AT MOTHERBOARD

“Advanced Technical Motherboard”

- AT motherboard was very common in personal computers during the 1980s. AT motherboards are characterized by their physical size and layout, and can fit only in AT casing. The size of AT motherboard is about 305 mm × 280 mm.

Build:
Large, Legacy

CPU Slots:
1

Memory slots:
2-4

Origin:
IBM

BIOS:
Legacy BIOS

PCI Slots:
Limited or none

SATA:
None/IDE

Dimensions W x Depth
12” x 11-13”

ATX MOTHERBOARD

“Advanced Technology Extended Motherboard”

- The ATX motherboard is basically an evolved version of the earlier AT motherboard and hence it offers many improvements and features.
- The ATX motherboard offers improved power management. The ATX motherboard has larger expansion cards that allows more space between cards. The socket for the processor is located in the center of the motherboard, and the sockets for memory are provided to the right of the processor socket.

Build:
Standard full-size

CPU Slots:
1

Memory slots:
2-8

Origin:
INTEL

BIOS:
UEFI

PCI Slots:
3-7

SATA:
4-10

Dimensions W x Depth
12’’ x 9.6’’

BTX MOTHERBOARD

“Balanced Technology Extended Motherboard”

- Designed to avoid the obstructed air flow that is forced around components in ATX systems. They are optimized for the newest technologies including PCI Express and SATA.

Build:
Smaller than ATX

CPU Slots:
1

Memory slots:
2-4

Origin:
INTEL

BIOS:
UEFI

PCI Slots:
3-4

SATA:
2-6

Dimensions W x Depth
12.8 x 10.5”

EXTENDED-ATX MOTHERBOARD

- Largest of all ATX variants. This motherboard is designed to build a powerful PC system. Its configuration allows it to work alongside full tower cases and provide ample space and features.
- The massive size of this motherboard not only allows expansion but also offers a good breathing room for essential components. This affects the overclocking of the system, thus improving the performance. EATX motherboards are perfect for enthusiastic gamers or professional production workers (graphic designers, video editors, etc.) However, to enjoy such utilities you will have to pay an enormous amount

Build:
Larger than ATX

CPU Slots:
1

Memory slots:
4-8

Origin:
INTEL

BIOS:
UEFI

PCI Slots:
4-8

SATA:
6-10

Dimensions W x Depth
12” x 13”

LPX MOTHERBOARD

“Low Profile Extension Motherboard”

- It's designed for general use in desktop computers but is smaller compared to a standard advanced technology extended (ATX) motherboard. LPX motherboards are known for their unique layout, where expansion cards are mounted parallel to the board through a riser card, improving space and making it a perfect fit for slim or compact cases.

Build:
Low-profile for desktops

CPU Slots:
1

Memory slots:
2-4

Origin:
Western Digital

BIOS:
Legacy BIOS

PCI Slots:
Limited

SATA:
None/IDE

Dimensions W x Depth
9” x 11-13”

MICRO-ATX MOTHERBOARD

- It's a space-efficient alternative to standard ATX boards, offering a balance between size and functionality. Ideal for users seeking a smaller footprint without sacrificing essential features, microATX motherboards are versatile and suitable for various applications, including gaming rigs, home servers, and home theater PCs. Despite their reduced dimensions, these motherboards support high-performance components, making them a popular choice among PC builders looking to optimize space without compromising computing power.

Build:
Smaller than ATX

CPU Slots:
1

Memory slots:
2-4

Origin:
Intel

BIOS:
UEFI

PCI Slots:
2-4

SATA:
2-6

Dimensions W x Depth
9.6” x 9.6”

MINI ITX MOTHERBOARD

- Designed to support relatively low-cost computers in small spaces such as in automobiles, set-top boxes and network devices. It can also be used to make thin client computers. Mini-ITX motherboards typically consume less than 100 watts of power, about 5 to 25 watts less than larger architectures.
- The idea behind Mini-ITX was to build computing systems for industrial and consumer use with useful features and a high-speed processor in a compact footprint. Cars, network devices, routers, small robots and set-top boxes are the most common applications of Mini-ITX motherboards.

Build:
Very small

CPU Slots:
1

Memory slots:
2

Origin:
VIA

BIOS:
UEFI

PCI Slots:
1-2

SATA:
1-4

Dimensions W x Depth
6.7” x 6.7”

MINI-ATX MOTHERBOARD

“Mini Advanced Technology Extended Motherboard”

- is a smaller form factor motherboard standard that falls between the standard ATX and the smaller micro-ATX sizes
- Mini-ATX motherboards typically have fewer expansion slots and ports compared to standard ATX boards, making them suitable for compact desktop builds where space is limited. These motherboards are often used in small form factor PCs, home theater PCs, and other systems where a smaller footprint is desired without compromising too much on features and performance

Build:
Compact

CPU Slots:
1

Memory slots:
2-4

Origin:
AOpen

BIOS:
UEFI

PCI Slots:
1-3

SATA:
2-4

Dimensions W x Depth
5.9” x 5.9”

PICO BTX MOTHERBOARD

“Pico Balanced Technology Extended Motherboard”

- Pico ITX motherboards are the smallest form factor in the ITX family, offering several advantages due to their compact size and design. They are ideal for applications with space constraints, providing versatility and low power consumption
- Pico BTX motherboards measure 8 × 10.5 in (203 × 267 mm). This is smaller than many current "micro"-sized motherboards, hence the name "pico". These motherboards share a common top half with the other sizes in the BTX line, but support only one or two expansion slots, designed for half-height or riser card applications.

Build:
Similar to BTX

CPU Slots:
1

Memory slots:
1-2

Origin:
Intel

BIOS:
UEFI

PCI Slots:
1-2

SATA:
1-2

Dimensions W x Depth
8” x 10.5”

STANDARD-ATX MOTHERBOARD

“StandardAdvanced Technology Extended Motherboard”

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- The ATX motherboard offers improved power management. The ATX motherboard has larger expansion cards that allows more space between cards. The socket for the processor is located in the center of the motherboard, and the sockets for memory are provided to the right of the processor socket.

Build:
Standard full-size

CPU Slots:
1

Memory slots:
2-8

Origin:
INTEL

BIOS:
UEFI

PCI Slots:
3-7

SATA:
4-10

Dimensions W x Depth
12’’ x 9.6’’

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