Learn about the CPU socket

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The computer processor has a 'house' called a socket. People rarely mention the CPU socket because it does not help or hinder computer performance. This socket provides the standard shape for a specific CPU generation.

So why should you care about the CPU socket? If you want to upgrade the CPU, you need to know the types of sockets. Types of motherboard sockets indicate the type of CPU you can use when upgrading the processor or upgrading the entire system.

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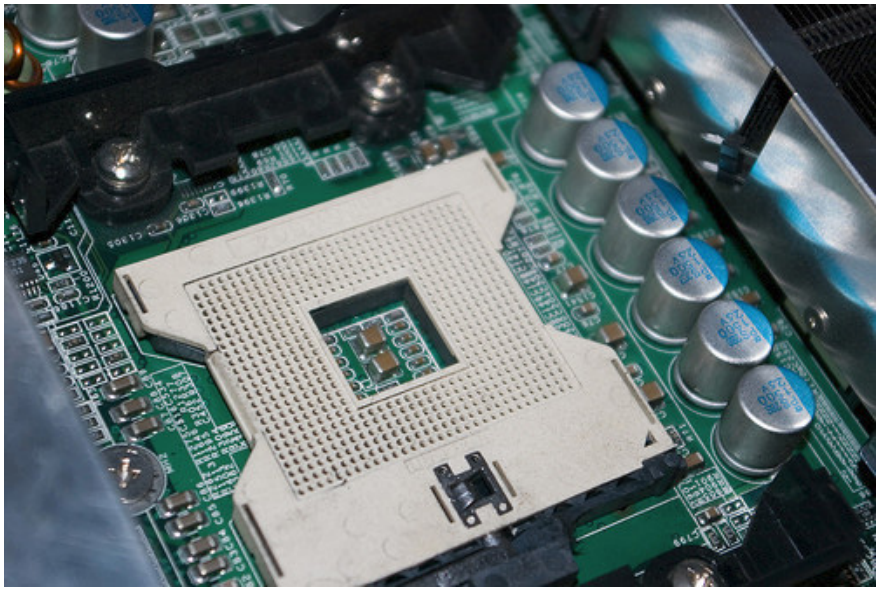
What is the CPU socket?



CPU socket is similar to light bulb socket. The light bulb socket makes the light bulb a part of the electrical network, providing the energy needed to operate the light bulb. Similarly, the CPU socket causes the processor to be a part of the computer, providing power and ways for the CPU to communicate with the rest of the system hardware.

The modern computer places the CPU socket on the motherboard. Previously, computers with other CPU socket configurations included slot-based processors you could insert like modern PCI cards. However, today you can put the CPU into the socket on the motherboard and protect it with the latch.

CPU socket has been used for a long time. The first famous Intel processor, the Intel 386 used a PGA 132 pin socket. The original Intel Pentium CPU uses a 4 or more socket.

CPU socket is not as popular as other computer software. The sockets of Intel and AMD have different points regarding the difference in CPU configuration between these two CPU-producing giants.

1. Which company CPU should I choose: Intel or AMD?

Why are CPU cores different?

Unlike a light bulb outlet, the CPU socket design does not change often.

New processor architectures appear every few years and often come with a host of new requirements such as shape, size and motherboard compatibility. In addition, there are two major x86 processor manufacturers, AMD and Intel. AMD and Intel CPUs have a separate processor structure and cannot be compatible between the two.

However, back in the early days of computers, if you were lucky enough to own a high-end Socket 7 motherboard, you could use Intel Pentium, AMD K6, K6-2 or K6-3, Cyrix 6 × 86, IDT Winchip or Rise Technology mP6. And although there are dual CPU motherboards, it is not possible to use AMD and Intel CPUs simultaneously.

Types of CPU sockets

Over the years, many types of CPU sockets appear and disappear. Currently there are only three types of CPU sockets: LGA, PGA and BGA.

LGA and PGA socket base

LGA and PGA can be interpreted as opposites. LGA (Land grid array) includes a socket with pins you can put the processor on, while PGA (Pin grid array) places pins on the processor, then you plug the socket with holes set appropriately.

In the era of modern computing, Intel CPUs use LGA sockets and AMD CPUs use PGA sockets. Although there are exceptions. For example, AMD Threadripper using Socket TR4 (short for Threadripper 4) is an LGA socket. TR4 is AMD's second LGA socket. Previous Intel CPUs, such as Pentium, Pentium 2 and Pentium 3 all use PGA sockets.

BGA plug base

There is also a BGA socket, short for Ball grid array. BGA technology permanently attaches the processor to the motherboard during production, so you cannot upgrade the CPU.

Also, in terms of technical BGA is not a socket because it is a permanent feature of the motherboard. You can easily replace LGA CPU and PGA CPU. The BGA socket is still mentioned here because it has the same function.

A few years ago, it was rumored that Intel will not use the LGA dock anymore after Intel Haswell 4th generation CPU. However, rumors are only rumors and Intel continues to develop CPU using LGA socket.

With the proliferation of system hardware on the chip (SoC), Intel has also increased its use of BGA sockets. Similarly, ARM, Broadcom, Qualcomm, Nvidia and other SoC manufacturers all rely heavily on BGA.

How to name the CPU socket types

A processor that uses a specific type of socket will fit any motherboard with that socket, right? The answer is wrong.

Types of sockets such as LGA are a category rather than a specific model. It has many socket variants built on basic specifications.

Intel names the LGA socket based on the number of stands. For example, LGA1155 means there are 1155 separate stands. The processor built for that specific socket type will only work with that socket. Sometimes the numbers may be the same as LGA1155 and LGA1156, but you can't use each other. A single Intel socket variant can include multiple CPU generations.

On the other hand, AMD's naming conventions are a bit different. They label the base with the motherboard name like AM3 or FM1. Compatibility is still strictly enforced, although AMD occasionally upgrades the dock while maintaining compatibility. You can identify an AMD socket that is upgraded with a + symbol on its name like AM2 + and AM3 +.

1. Differentiate AMD and APU AMD CPUs through brand logos

Will the CPU dock become extinct?

Most components including processors can be upgraded or maintained. Home and business users can build their own system with the desired specifications.

The increase of mobile devices has created a slight change. Far from the new extinct PC, it is changing dramatically to cope with the needs of the world of mobile networks. The extinction of the socket may also be part of that change. CPU plugs add bulk and produce complexity for products to reduce cost and size.

Predicting the collapse of the CPU socket in the near future is too early. You only need to look at the CPU and Intel manufacturing processes as well as the development of upgrading existing sockets or creating new socket variants to judge the situation.

Although there are more mobile devices than ever, enthusiasts and IT professionals will always look to the motherboard motherboard to upgrade a part, instead of replacing the entire system, server or way. other.

Consider building your own PC, but don't know where to start? Check out this tutorial series for DIY PC Assembly, Desktop Building.