Can I Upgrade My Laptop Processor from i5 to i7?

Core i5 and Core i7 are the two CPU series made by Intel that are mainly aimed at mid-range and high-performance computers respectively.

As this applies to laptops also, you may be having one that's powered by an Intel Core i5 processor. Therefore, you may be interested to know what's being inquired commonly: can I upgrade my laptop processor from i5 to i7?

The short answer is that the upgrade is technically possible only in laptops with LGA and PGA sockets with the same number of pins and CPU generation. In such a case other factors also need to be considered such as BIOS support and TDP. However, in the case of BGA sockets, the upgrade is not possible because the CPU is soldered onto the motherboard.

We will have a look at all these aspects in detail here.

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Have you ever wondered about upgrading the processor to an Intel Core i7 for a laptop with a Core i5 CPU?

Laptops make use of different CPU sockets through which the CPU makes electrical and mechanical connections with the motherboard. These CPU sockets are primarily of three types: LGA, PGA, and BGA.

If your laptop makes use of an LGA or PGA socket, you can technically upgrade from Core i5 to Core i7 if both are of the same generation and have the same pin number. If the socket type is BGA, this means that the CPU is soldered onto the motherboard and it's virtually impossible to upgrade it.

Those mobile Intel Core CPUs that come in the U and Y series make use of the BGA socket. On the other hand, those CPU models like H, HQ, M, MQ, and MX utilize PGA sockets. This implies that concerning these series, you can upgrade your laptop processor from Intel Core i5 to Intel Core i7.

Your laptop's BIOS must also support the upgrade. As laptop models come in different variants, you can check for the variant that has the Core i7 CPU that you want to upgrade.

CPU Sockets and Processor Upgrade

As stated before, there are three CPU sockets used in laptops currently: LGA (Land grid array), PGA (Pin grid array), and BGA (Ball grid array).

In the LGA socket, there exist pins on the motherboard on which you place the processor. In the PGA socket, the pins are on the CPU itself which you place in a socket.

CPUs with LGA and PGA sockets are upgradeable, and this allows you to upgrade from Core i5 to i7 using those sockets. You must ensure that the pin number corresponding to the socket is the same in the case of both the Core i5 and i7 processors.

For example, if you have an existing Core i5 CPU that's based on socket FCPGA946 (with 946 pins), then the Core i7 you need to upgrade should also have the same socket and number of pins. A Core i7 based on FCPGA988 (with 988 pins) won't fit into the socket.

In the BGA socket, the processor is permanently connected to the motherboard. For this purpose, there are small solder balls under the CPU while the motherboard has small solder pads on it. So, removing a BGA-based Core i5 processor and replacing it with a BGA-based Core i7 processor needs a high level of expertise and equipment.

Many laptops employ a BGA socket for the CPU and therefore upgrading it is an extremely risky affair.

A Possible Upgrade Example

Here we give an example of a possible upgrade from Core i5 to i7.

Suppose you have a laptop with a 3rd generation dual-core Core i5-3210M processor. Upon checking its specifications on the Intel website, you find that the model utilizes an FCPGA988 socket.

You can search the internet and find a 3rd generation i7 processor that uses the same socket. You can also search on the website of the laptop manufacturer to see if there are variants of the same laptop with an i7 processor.

A recommendation is the 3rd generation quad-core Core i7-3630QM processor that makes use of the same socket.

You need to check other factors too before upgrading (such as TDP) and that's why we recommend that it should be done only by experienced persons.

Why Upgrade from Intel Core i5 to i7?

There exist different variations in Core i5 and i7 processors even of the same generations that you must keep in mind.

You must choose the processor model that meets your requirements and works in a stable condition without causing issues.

For instance, you may get a greater number of cores, faster clock speed, and better cache size after an upgrade from Core i5 to i7. Furthermore, Core i5 may or may not support hyperthreading while Core i7 models usually support it.

What this means is that you may get better performance especially if you are involved with heavy and demanding tasks like professional video editing, graphic designing, and regular gaming.

Of course, this may be possible if you have a dual-core Core i5 processor and you upgrade it to a quad-core Core i7 processor. However, it may not be necessary to expect a large performance gain on all i5 to i7 upgrades.

The Cons of Upgrading from Intel Core i5 to i7

There are also certain cons of the processor upgrade from Core i5 to i7.

The process can be delicate and there's no guarantee that the new processor would work up to its full potential stably.

There's a risk that the new i7 CPU may not match the cooling device. Moreover, it may not support the heat dissipation of the upgraded CPU.

Additionally, the upgrading procedure may void the laptop's warranty and there is a chance of damage and malfunction. Your laptop's battery life may get shortened as the i7's power consumption is comparatively high compared to the i5.

You may also have to pay a large sum of money to get a Core i7 CPU.

Conclusion

Here we talked about what many people want to know: can I upgrade my laptop processor from i5 to i7?

The upgrade can be possibly done if you have PGA or LGA socket and you take care of other factors such as CPU generation and TDP.

However, there's no guarantee that it would work stably and with the full potential of the Core i7 processor in the long run.

Therefore, it's often recommended that you get a new laptop with a more capable processor that would suit your requirements.