

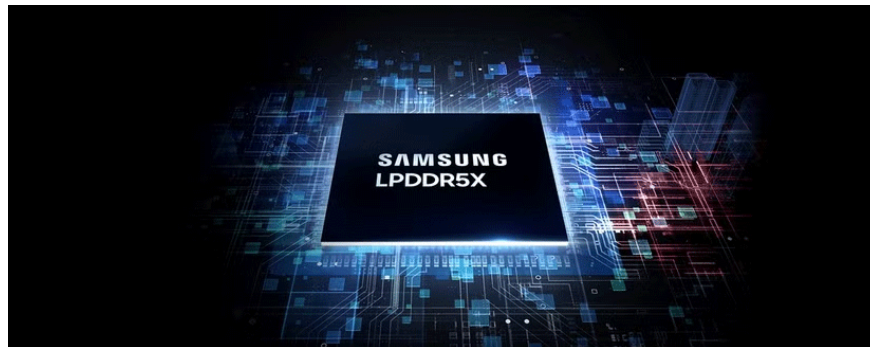
What is LPDDR5X RAM? How is it better than regular LPDDR5?

What is LPDDR5X that is getting so much attention? And what makes it superior to the regular LPDDR5 standard?

As laptops got thinner, lighter, and faster, manufacturers switched to soldering more and more components onto the motherboard, leading to embedded memory. Embedded memory loses upgradeability, but makes up for it in speed.

As the race for perfect thin-and-light performance heats up, embedded memory seems to be the future we're heading towards.

What is LPDDR5X?



If you're looking at a high-performance laptop, the memory type will likely be LPDDR5X. This standard was introduced in 2021 and is the latest in the LPDDR (Low Power Double Data Rate) memory standard. It brings a number of improvements over the DDR4, LPDDR4, and DDR5 standards, including speed, reliability, and power efficiency.

LPDDR5X is designed for mobile phones, thin and light laptops, and just about anything that requires fast memory without adding bulk. Because it's faster than current laptop RAM standards, you can do more with less RAM while still extending your laptop's battery life.

Cannot be upgraded, more expensive

One major drawback of LPDDR5X in particular, and embedded memory in general, is that it is not upgradeable. If you buy a laptop with LPDDR5X memory, you will have to decide how much memory you want at the time of purchase. Since the memory chips are soldered to the motherboard, there is no option to increase or upgrade the memory later by adding or replacing existing modules. However, the upcoming LPACMM2 memory could

change that.

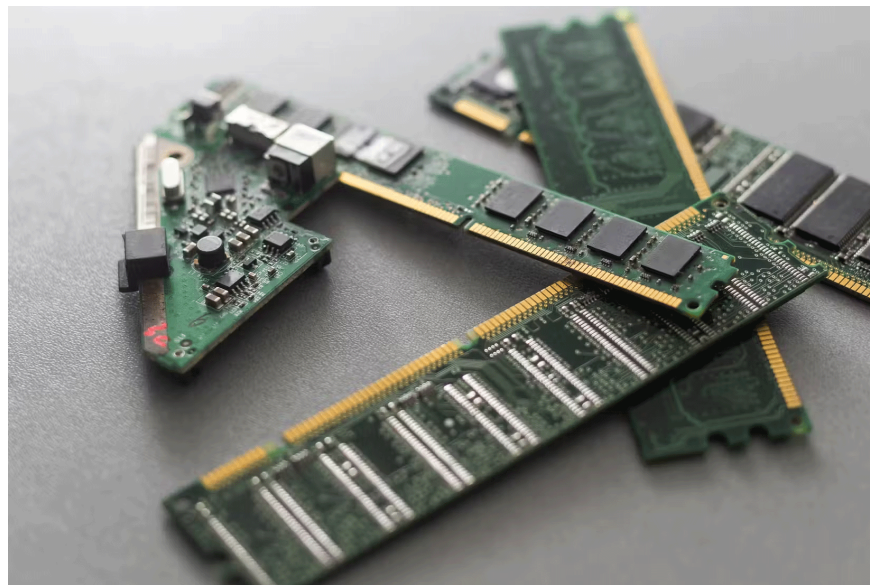
Another downside is cost. LPDDR5X laptops tend to cost more than LPDDR5 or DDR5 options. However, this is an understandable downside, as you get significantly higher speeds and better power efficiency.

How does LPDDR5X compare to LPDDR5?

As mentioned earlier, LPDDR5X brings several improvements over LPDDR5.

1. Speeds increased from 6.5Gbps to 8.5Gbps using the same 1.1V core voltage. Performance figures vary by manufacturer, with Samsung claiming an industry-best data transfer rate of 10.4Gbps
2. Higher reliability thanks to new adaptive refresh management.
3. Up to 20% better battery performance.
4. Better signal integrity.

This means you get up to 2Gbps faster memory performance at the same power consumption. System RAM is one of the most accessed components, and every data transfer consumes power. That 20% better battery performance may not seem like much on paper, but when spread out over hundreds, if not thousands, of data transfers, it can do wonders for battery life without sacrificing performance.



If you're using LPDDR5 or even DDR5 memory in your laptop, you probably won't notice a difference in performance unless you're using programs that are taxing on your system, like games or editing software. However, the battery performance will be beneficial, as not only will you get better overall battery life without a larger, bulkier battery in your laptop, but you'll also be able to maintain fast performance when using a lower-wattage battery or charger.

Why use LPDDR5X?

Even though it's not upgradeable, many people still prefer LPDDR5X over other memory variants for two main reasons: Speed and power efficiency.

If you need the fastest memory possible in your laptop, LPDDR5X is the way to go. Depending on the rest of your laptop's configuration, the speed difference between memory types can make a big difference. If you run multiple programs side by side, have a lot of browser tabs open, or use resource-intensive programs like Photoshop or Premiere Pro, that extra speed will make your life a lot easier.

You get all this extra performance while getting the most out of your laptop's battery. One of the biggest advantages of having power-efficient components in a mobile device, whether it's a laptop, phone, or handheld gaming console, is that you get better battery life without needing a larger battery. This directly impacts how thin and light the device is.

LPDDR5X is a one-time expense. You may pay a little more, but the performance and improved battery life are worth it. Plus, the increased performance means your laptop will last longer.

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