Crucial T500 PCIe Gen4 NVMe SSD

Reviewers Guide

crucial
by Micron

Crucial T500 Reviewers Guide

About Crucial

Dedicated to memory and storage.
Committed to empowering consumers.

As Micron's global consumer brand, we are uniquely able to connect millions of customers to the innovation and technology that Micron® has been perfecting for more than four decades. Today, the Crucial® brand offers a wide range of memory and storage products worldwide, from leading retail and e-tail stores to commercial resellers and system integrators, enhancing system performance and user productivity on every continent with world-class engineering and a relentless focus on our customers.

About the Crucial T500 PCIe 4.0 NVMe SSD

The Crucial T500 Gen4 SSD is a high-end PCIe® 4.0 NVMe™ SSD built for gaming, photo/video editing and high workload applications. It is our best-in-class, premium storage Gen4 product built on Micron 232-layer 3D TLC NAND[1] and is a new addition to Crucial's internal SSD Pro series line up.

The Crucial T500 has lightning fast Gen4 speeds up to 7,400MB/s reads and 7,000MB/s writes[2], which is more than 2x faster than Gen3[3]. It's not only faster but efficient with an up to 40% higher performance-to-power ratio[4]. The Crucial T500 is built for ultimate gaming and content creation — load games up to 16% faster[5] and get faster texture renders and less CPU utilization with Microsoft® DirectStorage[6]. Also, get up to 42% faster[7] performance in content creation apps, run heavy workloads, and render photos or videos faster.

Crucial T500 comes either with or without an integrated heatsink. The T500 is available in 500GB (non-heatsink only), 1TB & 2TB capacities[8] (both heatsink & non-heatsink SKU). A 4TB option will be available in 2024.

Crucial T500 Gen4 SSD target market

The Crucial T500 was engineered for gamers, creators and professionals who need high-performance storage to stay ahead of the competition. It's designed for PlayStation® 5[9] (heatsink SKU only), laptops (non-heatsink SKU only), desktops and workstations (both heatsink & non-heatsink SKU)

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Crucial T500 Gen4 SSD highlights

The T500 Gen5 SSD is Crucial's high-end Gen4 storage product, and has been designed to meet these specifications:

- Sequential read/write speeds up to 7,400/7,000MB/s[2]
- Random read/write speeds up to 1.18/1.44M IOPs[2]
- PCIe 4.0 NVMe 2280 M.2 SSD
- Built with Micron 232-layer 3D TLC NAND[1]
- Available with and without a low-profile integrated heatsink, perfect for PS5™ console upgrades
- Spacious capacity options: 500GB, 1TB, 2TB[8]
- Micron LPDDR4 DRAM, 1GB per 1TB of NAND flash
- Phison® PS5025-E25 Controller
- Microsoft DirectStorage optimized with Phison® I/O+ technology
- Works with laptops, desktops and PS5 consoles
- Backward compatible with PCIe 3.0
- 5-year limited warranty[10]

Advanced features

- Static and Dynamic SLC caching
  - Variable by user capacity, up to approx. 20%[11]
- Redundant array of independent NAND (RAIN)
- Multi-layer data integrity algorithms
- Adaptive thermal protection
- Data protection for power loss events
- Active garbage collection
- TRIM support
- Self-monitoring and reporting technology (SMART)
- Error correction code (ECC)
- NVMe® autonomous power state transition (APST) support

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Product options and model part number

Model number	Detail
CT500T500SSD8	500GB Crucial T500 PCIe Gen4 NVMe™ M.2 SSD
CT1000T500SSD8	1TB Crucial T500 PCIe Gen4 NVMe™ M.2 SSD
CT2000T500SSD8	2TB Crucial T500 PCIe Gen4 NVMe™ M.2 SSD
CT1000T500SSD5	1TB Crucial T500 PCIe Gen4 NVMe™ M.2 SSD with heatsink
CT2000T500SSD5	2TB Crucial T500 PCIe Gen4 NVMe™ M.2 SSD with heatsink

Expected performance

	500GB	1TB	2TB
Seq reads[2] (MB/s)	7,200	7,300	7,400
Seq writes[2] (MB/s)	5,700	6,800	7,000
Random reads[2] (K IOPS)	800	1,150	1,180
Random writes[2] (K IOPS)	1,390	1,440	1,440
Endurance (TBW)	300	600	1,200

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Dimensions

Crucial T500 with heatsink depth – 9.7mm

Crucial T500 depth – 2.3mm

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Synthetic benchmark system configuration

Type	Configuration
Model	ASUS ROG Strix X670E-E Gaming Wi-Fi
Processor	AMD Ryzen 9 7950X
Firmware	P8CR4101
Drive	Crucial T500 Gen4 M.2 2280 SSD
Memory	Crucial 32GB DDR5 4800MHz CT16G48C40U5.M8A1
Benchmark tools	CDM v8.0.4 PCM10: 2.1.2523.0 3D Mark: 2.21.7312.0
Target drive connected as primary OS drive and secondary	Yes
Graphics	Nvidia RTX 4080
OS	Windows® 11 Pro

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Test methodology

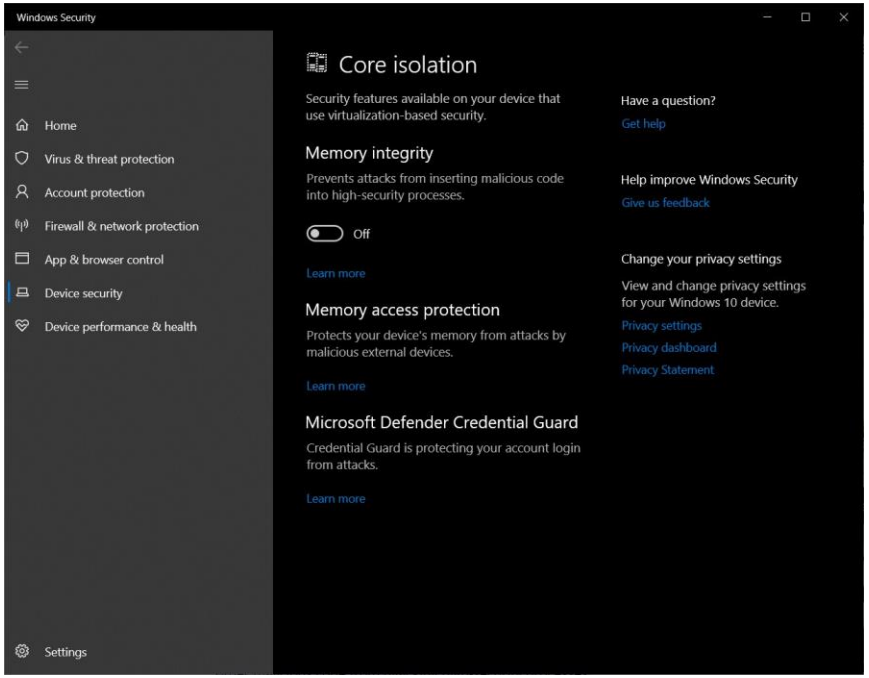
To boost gaming performance, Microsoft recommends disabling Core isolation (in addition to the "Virtual Machine Platform" from the Windows 11 feature settings).

Disable Core isolation

To disable Core isolation, use these steps:

1. Open **Windows Security**
2. Click on “Device security”
3. Under **Core isolation**, click "Core isolation details"
4. Open Core isolation settings
5. Turn off the memory integrity toggle switch to disable the feature
6. Disable memory integrity

After you complete these steps, restart the device to apply changes.



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Support throughout the review process

Where can I get images and other rich media to include in my review?

We have an extensive library of product images and videos for Crucial SSDs. Please reach out to us if you need photos, videos or other assets to support your review (details below).

Need more information? Have any questions?

If you have questions related to the Crucial T500 PCIe Gen4 NVMe™ SSD, please don't hesitate to contact us! We are more than willing to answer any of your questions to ensure that your product review is accurate and reflects the capabilities of the drive.

A note about your review

Recent changes in laws around the world may require you to declare in your review whether you have personally used the product, and whether you received the product free of charge. These laws also require you to be truthful about your experiences with the product.

If you are based in the United States, we encourage you to research the FTC's "Endorsement Guides," available at *https://www.ftc.gov/*

If you are outside the United States and are uncertain about what you should and should not do in your country as it relates to a product review, please reach out to us.

At Crucial, we strive to make great products that are fit-for-purpose and we want you to have a great experience with the Crucial T500 Gen4 SSD.

Should you need any help or support throughout the product review process, we encourage you to reach out through the methods described on the previous page of this guide.

Thank you for considering Crucial.

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Footnotes:

1. For more information about Micron 232-layer NAND, visit: https://www.micron.com/products/nand-flash/232-layer-nand
2. Typical I/O performance as measured using CrystalDiskMark® with default settings for NVMe SSDs and write cache enabled. Windows 11 Core isolation disabled for performance measurement. Fresh out-of-box (FOB) state is assumed. For performance measurement purposes, the SSD may be restored to FOB state using the secure erase command. System variations will affect measured results.
3. Calculated by comparing T500's sequential reads of 7,400MB/s to the previous generation's (P5 Plus) speeds of 6,600MB/s, or to the SATA's (MX500) speed of 560MB/s. Actual performance may vary.
4. Power-to-performance comparison measured internally between Crucial P5 Plus and T500 PCIe® 4.0 NVMe SSDs. Your performance may vary.
5. Gaming speed claims based on Micron test results measuring Forspoken Benchmark, Call of Duty® and Valorant® bootup times of the Crucial T500 and other Gen4 SSDs. Your performance may vary.
6. Compared to Gen4 SSD performance without DirectStorage, based on Micron test results with supported GPU that uses GPU decompression.
7. Faster performance with content creation apps based on internal test results measuring SPECwpc benchmark scores comparing the Crucial T500 to other Gen4 SSDs. Your performance may vary.
8. Some of the storage capacity is used for formatting and other purposes and is not available for data storage. 1GB equals 1 billion bytes. Not all capacities available at initial launch.
9. See https://www.playstation.com/en-us/support/hardware/ps5-install-m2-ssd/ for specs and installation instructions.
10. Warranty valid for five years from the original date of purchase or before writing the maximum total bytes written (TBW) as published in the product datasheet and as measured in the product's SMART data, whichever comes first.
11. Based on Crucial internal testing.

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Product images