Best-in-class user experience for everyday computing



The Micron 2500 NVMe SSD defines optimal storage for everyday computing. It leads the industry with best-in-class everyday computing user experience,[1] QLC value, and performance that beats competitive TLC and QLC based SSDs — and it is the world's first client SSD using 200+ layer QLC NAND.[2]

Best-in-class user experience for everyday computing

The Micron 2500 SSD leads the pack with superior user experience benchmark results, performance-enhancing accelerated caching for faster write performance,[3] and a broad range of form factor and capacity options.

QLC value. TLC performance. Micron innovation.

As a leading QLC SSD, the Micron 2500 offers better performance than competitors' TLC- and QLC-based SSDs in both sequential and random IO — reaching up to 7,100 MB/s sequential read speed and up to 1 million random read IOPS.

The world's first client SSD with 200+ layer QLC NAND

Micron is the first to ship SSDs to OEMs using the highest density and highest layer count QLC NAND. This is the world's densest NAND with ONFI speeds up to 2,400 MT/s to help build faster SSDs.[4]



Micron 2500 NVMe SSD
(M.2 form factors: 22 x 80mm, 22 x 42mm, 22 x 30mm)

1. Class refers to currently in production client, value SSDs from the top five client suppliers (excluding consoles) by revenue as of February 2024, as noted in Forward Insights' analyst report, "SSD Supplier Status Q4/23 February 2024" in the Total Client tab. User experience refers to PCMark® 10 Full System Drive benchmark scores as measured by Micron Engineering. See https://benchmarks.ul.com/pcmark10 for additional information on this benchmark.
2. The only other broad market, client, value SSD using QLC NAND as of the date of this document's publication is the Solidigm P41 Plus which uses 144-layer QLC NAND. See https://www.solidigm.com/products/client/plus-series/p41.html#configurator for details.
3. Performance refers to random read and write IOPS and sequential read and write throughput performance statements. All performance statements are based on public information available at the time of this document's publication vs. SSD competitors per footnote 1.
4. Based on public material available at the time of this document's publication (competitors are defined as SK Hynix, Solidigm, Kioxia, Western Digital, and Samsung). See https://www.micron.com/products/storage/nand-flash/232-layer-nand for additional details about ONFI speed.
5. Unformatted capacity. 1GB = 1 billion bytes; formatted capacity will be less.
6. The theoretical maximum bandwidth for PCIe Gen4 is 2,000 MB/s, yielding a maximum theoretical bandwidth of 8,000 MB/s for a PCIe Gen4 x4 device. See https://www.techreviewer.com/tech-answers/how-fast-is-pcie-40/#how-fast-is-pci-express-40 for additional details.
7. Leading refers to NAND layer count, density, or both.

Micron 2500 SSD key benefits

Storage that delivers more productivity for the applications you use every day

The Micron 2500 SSD is designed to make you more productive by delivering best-in-class user experience for the applications you use every day.

It is available in a broad range of M.2 form factors, from 22 x 80mm down to a single-sided 22 x 30mm in capacities up to 2TB.[5]

The SSD that enables leading performance and superior value

By outperforming all of its TLC and QLC competitors, the Micron 2500 SSD offers best-in-class storage performance built for everyday computing.

It is built on Micron QLC NAND and is the world's first QLC SSD nearing PCIe® Gen4 maximum performance — up to 7,100 MB/s sequential read.[6]

Leading NAND technology drives improved SSD user experience and performance[7]

Micron is the first to ship SSDs to OEMs with the highest density and highest layer count QLC NAND – for the second time in a row!

200+ layer QLC NAND enables 30% higher density than our previous generation 176-layer QLC NAND and is 33% denser than our 232-layer TLC NAND.

Industry-leading 2,400 MT/s speed helps provide best-in-class SSD performance. Micron 200+ layer QLC NAND is the powerhouse behind great user experience in thin, light notebook PCs, handheld devices, and everywhere that performance and value are needed together.

micron.com/2500

Superior user experience, unbeaten flexibility

The Micron 2500 SSD has best-in-class user experience as measued by PCMark 10 benchmark results for both TLC and QLC NAND-based competitors' SSDs. It is available in three compact, M.2, single-sided form factors with capacities up to 2TB for wide-ranging flexibility.

Competitive SSD	Micron 2500 SSD improvement[8]
Competitor 1 (TLC)	Up to 45% better
Competitor 2 (TLC)	Up to 37% better
Competitor 3 (TLC)	Up to 27% better
Competitor 4 (QLC)	Up to 45% better

PCMark 10 overall performance comparison

Serious performance balanced with serious value

The Micron 2500 is the world's first QLC SSD reaching up to 7,100 MB/s sequential read — delivering superior overall performance that beats the competition regardless of their use of TLC or QLC NAND.

Micron 2500 SSD improvement[9]		
Performance type	vs. TLC	vs. QLC
Sequential read	Up to 48% better	Up to 72% better
Sequential write	Up to 32% better	Up to 97% better
Random read	Up to 38% better	Up to 131% better
Random write	Up to 25% better	Up to 85% better

Public performance information comparison

The world's leading NAND

Great SSDs are built with great NAND. The Micron 2500 SSD uses the world's densest NAND for OEM PCs to speed everyday applications with its 2,400 MT/s ONFI speed, helping build best-in-class SSD performance.

Micron 2500 SSD part numbers

MT FD K BA **512** Q GN - 1 BD 1 **A** AB YY

Drive capacity
512 = 512GB
1TO = 1TB
2TO = 2TB

Security features
A = Non-SED[10] TCG Pyrite
5 = SED TCG Opal

Micron 2500 NVMe SSD			
Category	Everyday use PCs and notebooks		
Model	Micron 2500 SSD		
Form factor	M.2 (22 x 30mm, 22 x 42mm, 22 x 80mm)		
Interface	PCIe Gen4, NVMe 1.4c		
Capacities[11]	512GB	1TB	2TB
Sequential read (MB/s)[12]	6,600	7,100	7,100
Sequential write (MB/s)[12]	3,650	5,800	6,000
Random read (KIOPS)[13]	530	900	1,000
Random write (KIOPS)[13]	860	1,000	1,000
Read latency (TYP)[14]	50µs	50µs	50µs
Write latency (TYP)[14]	12µs	12µs	12µs
Endurance (TBW)	200TB	300TB	600TB
MTTF (million hours)	2	2	2
Sleep/PS4 power (mW)	<2.5	<2.5	<2.5
Active idle power (mW)	<150	<150	<150
PCIe Gen4 active read power (mW)	<6,300	<6,300	<6,300

Advanced features
Micron 3D 232-layer QLC NAND
Hardware-based AES 256-bit encryption[15]
Power-loss protection (data at rest)
Host-controlled thermal management
Performance enhancing accelerated caching
Thermal S.M.A.R.T. via SMBus
Basic management commands (BMC)
FW activate without reset
Sanitize block and crypto erase
Power-loss signal support
TCG Opal 2.02, TCG Pyrite 2.01
Micron Storage Executive SSD management tool

8. Based on Micron internal testing using the PCMark 10 benchmark overall scores vs. SSDs in footnote 1. Advertised capacity of 1TB used for comparisons due to limited 512GB and 2TB advertised capacity competitors' SSDs.
9. Statements refer to public information available at the time of this document's publication for the SSDs in footnote 1.
10. SED = self-encrypting drive. No software or system can provide absolute security under all conditions. Micron assumes no liability for lost, stolen or corrupted data arising from the use of any Micron products, including those products that incorporate any of the mentioned security features.
11. Unformatted capacity. 1GB = 1 billion bytes; formatted capacity will be less.
12. Sequential workloads measured at the fresh-out-of-box (FOB) state (see https://www.snia.org/education/online-dictionary/term/fob for details), SSD unformatted, write cache enabled, NVMe power state 0. Measured using Flexible I/O (FIO) tester with a 1MB transfer size and a queue depth of 32 (see https://fio.readthedocs.io/en/latest/index.html for additional information on this benchmark).
13. Random workloads measured at FOB, SSD unformatted, write cache enabled, NVMe power state 0. Measured using FIO with a 4KB transfer size and a queue depth of 128.
14. TYP refers to typical values. Read/write latency measured using a 4KB transfer size, queue depth 1.
15. No software or system can provide absolute security under all conditions. Micron assumes no liability for lost, stolen or corrupted data arising from the use of any Micron products, including those products that incorporate any of the mentioned security features.

micron.com/2500

©2024 Micron Technology, Inc. All rights reserved. All information herein is provided on as "AS IS" basis without warranties of any kind, including any implied warranties, warranties of merchantability or warranties of fitness for a particular purpose. Micron, the Micron logo, and all other Micron trademarks are the property of Micron Technology, Inc. All other trademarks are the property of their respective owners. Products are warranted only to meet Micron's production data sheet specifications. Products, programs and specifications are subject to change without notice. Rev. A 04/2024 CCM004-676576390-11742