

SanDisk® X300s SE-SSD (Self-Encrypting Solid-State Drive)

Introducing Security, Low Power, High Performance, and Reliability for an Uncompromising User Experience.



SanDisk X300s SE-SSD Benefits:

- Available in two form factors: 2.5" 7mm and M.2 2280
- Capacities of up to 1TB
- SE-SSD (Self-Encrypting Solid-State Drive) - hardware-based full-disk encryption using 256-bit AES encryption
- TCG Opal and Microsoft® Encrypted Hard Drive - compliant with industry-standard security specifications
- Advanced power management with DEVSLP low-power mode - compatible with Microsoft® InstantGo
- Tested for >80 terabytes written (TBW) - equivalent to 43GB/day over 5 years
- nCache™ - non-volatile write cache
- SATA Revision 3.2 6Gb/s interface
- Windows® WHCK certified
- Dynamic thermal throttling

Ideal for corporate PCs and notebooks, the SanDisk X300s SE-SSD¹ (Self-Encrypting Solid-State Drive) is built on industry-leading 1Ynm multi-level cell (MLC) NAND flash technology and incorporates hardware-based full disk encryption and advanced power management.

The X300s features support for the TCG Opal 2.0 and Microsoft® Encrypted Hard Drive security standards and a SATA DEVSLP low-power mode that is compatible with Microsoft® InstantGo. Users will appreciate greater productivity with more useable hours per battery charge² while companies can seamlessly secure their data for their on-the-go employees.

Performance

The X300s uses a tiered caching structure to improve random write performance. Modern operating systems typically access the storage device using small 4KB access blocks. These small access blocks conflict with the physical block structure (>1MB) of newer flash memory technology. To bridge this difference, the X300s employs three storage layers:

- Volatile cache — DDR DRAM cache
- nCache™ — A non-volatile flash write cache
- Mass storage — MLC NAND flash

The nCache™ write cache is used to accumulate small writes at high speed then flush and consolidate them into the larger MLC section of the NAND flash memory array.

Security³

The X300s SE-SSD seamlessly encrypts the drive data on the fly using hardware-based 256-bit AES encryption. It supports the following industry-standard security specifications:

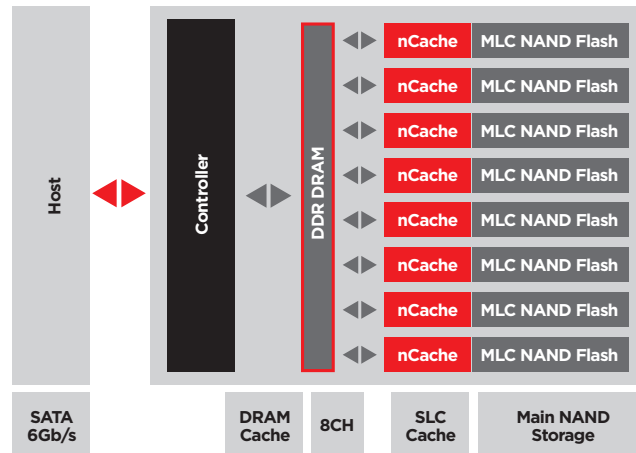
- ATA Security Feature Set
- TCG Opal 2.0
- Microsoft® Encrypted Hard Drive (TCG OPAL 2.0 + IEEE 1667)

Power Management

The X300s utilizes a SATA DEVSLP low-power mode to minimize its power consumption during idle periods. DEVSLP enables the SSD to completely shut off its SATA PHY, thus resulting in much lower power consumption compared to SATA Slumber. This increases the amount of usable hours per battery charge, which is essential for modern mobile devices.

Thermal Throttling

A performance throttling technique is used as a safety measure to protect the integrity of the data and prevent excessive heat dissipation. The X300s employs an on-board thermal sensor to monitor the SSD's critical component temperature. If it exceeds the normal range, drive performance is reduced until the temperature decreases to an acceptable level, at which time full performance is restored.



SanDisk® X300s SE-SSD Product Features and Specifications

Specifications are preliminary and subject to change

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Specifications subject to change without notice.

¹ Also available in models without security support.

² As compared to 7200 RPM SATA 2.5" hard drive. Based on published specifications and internal benchmarking tests.

³ The X300s is also available in models without security support.

⁴ Up to stated speed. Based on internal testing; performance may vary based on host device. 1 megabyte (MB) = 1 million bytes. IOPS = Input/Output Operations Per Second. TBW = Terabytes Written.

⁵ Approximations based on SanDisk internal metrics, that quantifies how much data can be written to a SSD in its lifespan expressed in terabytes written (TBW).

⁶ Power measurements in 25°C. Based on FW version with HiPM-enable.

⁷ Typical power for 256GB product.

⁸ MTF - Mean Time To Failures based on parts stress analysis.

Device	SanDisk X300s SE-SSD				
Form Factor	7mm 2.5-inch Cased, M.2 2280				
Interface	SATA Revision 3.2 (6 Gb/s) backward compatible to SATA Revision 2.0 (3 Gb/s) and SATA Revision 1.0 (1.5 Gb/s)				
Performance⁴	64GB	128GB	256GB	512GB	1TB
Seq. Read up to (MB/s)	510	510	520	520	TBD
Seq. Write up to (MB/s)	140	300	460	460	TBD
Rand Read up to (IOPS)	71k	85k	90k	96k	TBD
Rand Write up to (IOPS)	37k	66k	80k	80k	TBD
Endurance (TBW)⁵	>40	>80	>80	>80	TBD
Latency Read	55µs	55µs	55µs	55µs	TBD
Latency Write	65µs	65µs	65µs	65µs	TBD
Power (Average)	64GB	128GB	256GB	512GB	1TB
Active Power (mW)⁶	120	120	120	120	TBD
Max Read Operating (mW)	2,900	2,900	3,000	3,100	TBD
Max Write Operating (mW)	2,600	3,600	4,900	5,000	TBD
Slumber (mW)	80	80	80	90	TBD
DEVSLP (mW)⁷	5.0	5.0	5.0	6.5	TBD
MTTF⁸	Up to 2,000,000 hours				
Weight (g) 2.5"/M.2 2280	51±3/7±0.5		55±3/7±0.5		TBD
Product Dimensions	2.5": 7.0mm x 69.85mm x 100.5mm M.2 2280: 2.23mm x 22.0mm x 80.0mm				
Environmental					
Operating Temperatures	0°C to 70°C				
Non-operating Temperatures	-55°C to 85°C				
Operating Vibration	5.0 gRMS, 10 – 2000 Hz				
Non-operating Vibration	4.9 gRMS, 7 – 800 Hz				
Operating/Non-operating Shock	1,500 G @0.5 msec half sine				
Certifications	FCC, UL, TUV, BSMI, VCCI				



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