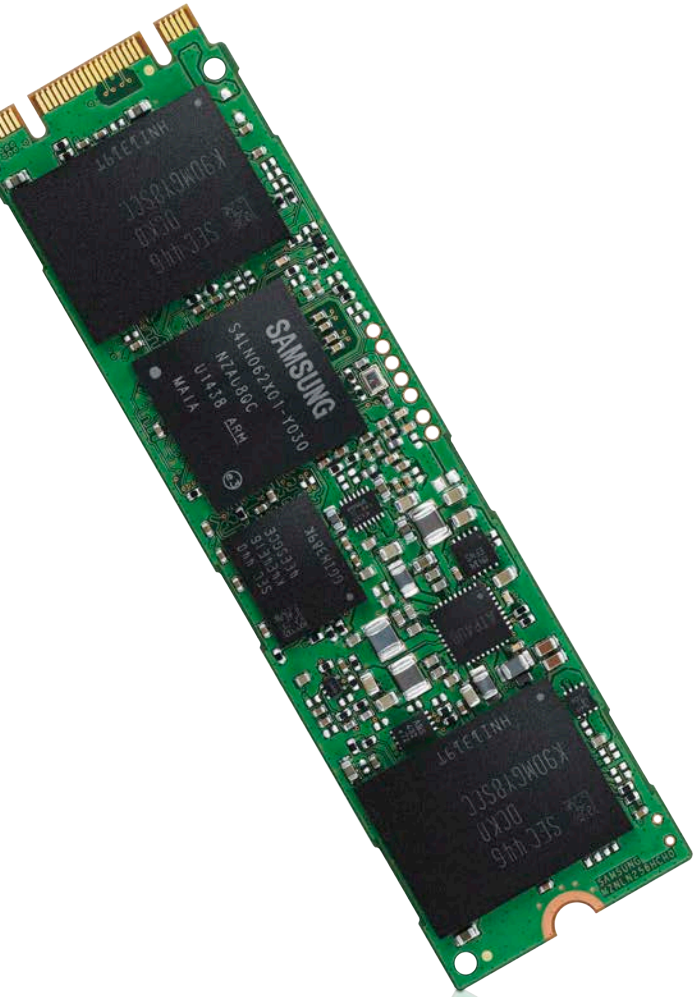
850 EVO M.2 Solid State Drives

250 GB	MZ-N5E250BW
500 GB	MZ-N5E500BW
1 TB (1,000 GB)	MZ-N5E1T0BW

SAMSUNG

Improved speed and performance from both computer and user



The advanced consumer SSD in an M.2 form factor, powered by exclusive Samsung V-NAND technology.

- SATA 6Gb/s SSD for Client PCs
- M.2 (2280)
- Samsung V-NAND
- Samsung Magician Software for SSD management
- Samsung Data Migration Software

Key features

V-NAND technology in the Samsung 850 EVO M.2 SSD

Samsung's unique V-NAND flash memory architecture is a breakthrough in overcoming the density, performance and endurance limitations of today's conventional planar NAND architecture. V-NAND is fabricated by stacking cell layers vertically, rather than decreasing the cells' dimensions to fit into increasingly smaller form factors. The result is higher density and better performance with a smaller footprint.

Optimized performance for everyday computing

Powered by Samsung's cutting-edge V-NAND technology, the 850 EVO M.2 delivers top-class sequential and random read and write performance to optimize everyday computing. The 850 EVO M.2 seamlessly integrates V-NAND memory, an MGX controller, DRAM memory and Samsung Magician software for high optimization. Like the 2.5" form factor, the 850 EVO M.2 maximizes the user experience with a trace-based benchmark, giving you form factor flexibility for SATA 6Gb/s interfaces.

Reinforcement of TurboWrite technology

Samsung was the first to introduce TurboWrite technology to sequential write performance. With TurboWrite Technology, write speeds have been significantly accelerated during data transfer by creating a high-performance write buffer in an SSD. If a consecutive write operation (i.e. no idle time) exceeds the size of a buffer, the transfer will exit TurboWrite and be processed at "After TurboWrite" speeds. But since the buffer size is more than sufficient for everyday computer use, users experience accelerated speeds for most workloads.

Guaranteed endurance and reliability for maximum use

The 850 EVO M.2 Series delivers guaranteed endurance and reliability by doubling the TeraBytes Written (TBW) compared to the previous generation 840 EVO Series. The 850 EVO M.2 Series is backed by an industry-leading 5 year warranty or 75TBW (250 GB)/150TBW (500 GB, 1 TB). With twice the endurance of a typical NAND flash SSD, the 850 EVO M.2 Series will keep working as long as you do.

Enhanced reliability with improved sustained performance

The 850 EVO M.2 Series boasts dependable performance up to 40% longer than the 840 EVO Series, with minimized performance degradation. You can use it every day, knowing it will perform at the highest levels for years.

Advanced data encryption

Self-Encrypting Drive (SED) security technology helps keep your data safe. An AES 256-bit hardware-based encryption engine secures your data without any of the performance degradation you might experience with software-based encryption. The 850 EVO M.2 is compliant with advanced security management solutions (TCG Opal and IEEE 1667), and you can erase or initialize data with the PSID crypto erase service.

Efficient power management for all PC applications

Since V-NAND uses half the power of 2D planar NAND, you save up to 50% more power during write operations than with the 840 EVO Series. And with a highly efficient 2mW Device Sleep feature and a controller optimized for V-NAND, you get longer battery life.

SSD sales:
1-866-SAM4BIZ
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Samsung 850 EVO M.2 Solid State Drives

		MZ-N5E250BW	MZ-N5E500BW	MZ-N5E1T0BW
Usage Application		Client PCs	Client PCs	Client PCs
Capacity[1]		250GB	500GB	1TB (1,000GB)
Dimensions (WxHxD)		80.15 x 22.15 x 2.38 (mm) / 3.16" x 0.87" x 0.09"	80.15 x 22.15 x 2.38 (mm) / 3.16" x 0.87" x 0.09"	80.15 x 22.15 x 2.38 (mm) / 3.16" x 0.87" x 0.09"
Interface		SATA 6Gb/s (Compatible with SATA 3Gb/s and SATA 1.5Gb/s)	SATA 6Gb/s (Compatible with SATA 3Gb/s and SATA 1.5Gb/s)	SATA 6Gb/s (Compatible with SATA 3Gb/s and SATA 1.5Gb/s)
Form Factor[2]		M.2 (2280)	M.2 (2280)	M.2 (2280)
Controller		Samsung MGX Controller	Samsung MGX Controller	Samsung MGX Controller
NAND Flash Memory		Samsung V-NAND	Samsung V-NAND	Samsung V-NAND
DRAM Cache Memory		512MB LPDDR3	512MB LPDDR3	1GB LPDDR3
Performance[3]	Sequential Read (Max.):	540 MB/s	540 MB/s	540 MB/s
	Sequential Write[4] (Max.):	520 MB/s	520 MB/s	520 MB/s
	4KB Random Read (QD1)(Max.):	10,000 IOPS	10,000 IOPS	10,000 IOPS
	4KB Random Write (QD1)(Max.):	40,000 IOPS	40,000 IOPS	40,000 IOPS
	4KB Random Read (QD32)(Max.):	97,000 IOPS	97,000 IOPS	97,000 IOPS
	4KB Random Write (QD32)(Max.):	89,000 IOPS	89,000 IOPS	89,000 IOPS
Data Security		AES 256-bit Full Disk Encryption (FDE) TCG/Opal V2.0, Encrypted Drive (IEEE1667)	AES 256-bit Full Disk Encryption (FDE) TCG/Opal V2.0, Encrypted Drive (IEEE1667)	AES 256-bit Full Disk Encryption (FDE) TCG/Opal V2.0, Encrypted Drive (IEEE1667)
Weight (Max.)		8g	8g	8g
Reliability (MTBF)		1.5 Million Hours	1.5 Million Hours	1.5 Million Hours
TBW (Terabytes Written)		75TBW	150TBW	150TBW
Power Consumption[5]	Active Read/Write (Average/Max.):	2.2W / 2.7W	2.2W / 2.7W	2.2W / 2.7W
	Idle (Max.):	50mW	50mW	50mW
	Device Sleep (Typ.):	2mW	2mW	3mW
Supporting Features		TRIM (Required OS Support), Garbage Collection, S.M.A.R.T	TRIM (Required OS Support), Garbage Collection, S.M.A.R.T	TRIM (Required OS Support), Garbage Collection, S.M.A.R.T
Temperature	Operating:	0°C to 70°C	0°C to 70°C	0°C to 70°C
	Non-Operating:	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Humidity		5% to 95%, Non-Condensing	5% to 95%, Non-Condensing	5% to 95%, Non-Condensing
Vibration (Non-Operating)		20~2000Hz, 20G	20~2000Hz, 20G	20~2000Hz, 20G
Shock (Non-Operating)		1500G, Duration 0.5m Sec, 3 Axis	1500G, Duration 0.5m Sec, 3 Axis	1500G, Duration 0.5m Sec, 3 Axis
Warranty		5 Years Limited	5 Years Limited	5 Years Limited

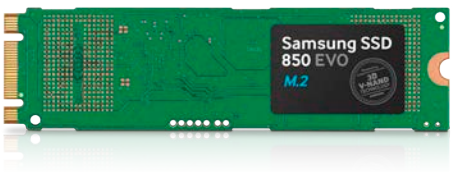
[1]1GB = 1,000,000,000 bytes. Actual usable capacity may be less (due to formatting, partitioning, operating system, applications or otherwise).

[2]M.2 is a form factor specification for ultra-thin PCs. Commercially, M.2 is 22mm in width with lengths of 30, 42, 60, 80 or 110mm. Samsung provides the most popular form factor with 22mm x 80mm model (i.e., 2280). Since M.2 is a form factor specification, SSD manufacturers can produce various types of M.2 SSDs with different interfaces (for example, SATA-based M.2, PCIe-based M.2 and NVMe-based M.2). The Samsung SSD 850 EVO M.2 is SATA-based.

[3]Sequential performance measurements based on CrystalDiskMark v.3.0.1. Random performance measurements based on Iometer 1.1.0. Performance may vary based on SSD's firmware version, system hardware and configuration. Test system configuration: Intel Core i7-4790K @ 4.0GHz, DDR3 1600MHz 8GB, OS: Windows 7 Ultimate x64 SP1, IRST 13.0.3.1001, Chipset: Intel® Z97PRO.

[4]Sequential Write performance measurements based on TurboWrite technology. The sequential write performances after TurboWrite region are 300MB/s (250GB) and 500MB/s (500GB/1TB).

[5]Power consumption measured with IOmeter 1.1.0 with Intel i7-4770K, DDR3 8GB, Intel® DH87RL, OS: Windows 7 Ultimate x64 SP1.



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