Make your mark
with a new caliber of performance & endurance

Samsung SSD 850 EVO

Powered by 3D V NAND technology, maximizing everyday computing experiences

Introducing the SSD that transform your computer into one that`s fiercely rapid and powerful. Transfer massive data in seconds while working with prolonged battery life. The best part? It will stand up to time a lot longer than its predecessors.

SAMSUNG

Ramped up performance for everyday use

Obtain higher-caliber SSD performance and endurance powered by 3D V-NAND technology

If you're looking for the next great innovation in SSD performance and worry-free reliability, look no further with the Samsung SSD 850 EVO. Boasting the world's first 3D Vertical-NAND (V-NAND) SSD, the 850 EVO brings professional-caliber computing to the end consumer, delivering optimized performance for everyday use. Whether you're an avid gamer or Internet surfer, you'll find that the 850 EVO delivers lightning-fast speeds - the fastest on the market. The 850 EVO also brings you unmatched endurance and reliability to handle whatever task you throw at it - and it does it superbly. Plus, it delivers more efficient power management than you ever dreamed possible.

Discover the advantages of 3D V-NAND technology

The secret behind Samsung's landmark 3D V-NAND technology consists of three important innovations : materials, structure and integration, which result in more capacity, faster speed, outstanding endurance and superb power efficiency.

The vertical architecture enables more memory cells to fit in a NAND chip in less space for significantly more capacity resulting in higher data quality. Cell-to-cell interference is virtually eliminated, enabling data to be written much faster for better performance. Using non-conductive insulators that experience less stress and are more resistant to wear help maintain cell integrity and prevent data corruption for greater endurance. And all there are achieved with significantly less power consumption that you would expect - in fact, up to 50 percent savings in active writing power.

Kick up your PC's speed with performance-enhancing features

TurboWrite

The 850 EVO provides optimized performance for everyday computing use, delivering an over 10 percent improved user experience (UX) compared with its predecessor, the 840 EVO.* Equipped with TurboWrite technology, the 850 EVO provides fast random write speeds up to 1.9 times that of the 840 EVO in the 120/250GB models**. TurboWrite technology accelerates write speeds by creating a high-performance write buffer in the SSD. First, data is transferred to the high-performance buffer at accelerated speeds. Then, when the write operation exceeds the size of the buffer during idle periods, the data is moved from the buffer to the primary storage region of the SSD at "after TurboWrite" speeds. The buffer size is optimized for everyday PC use and typically delivers TurboWrite accelerated speeds.

* PCMark7 (250GB) : 6,700 (840 EVO) < 7,600 (850 EVO) / ** Random Write (QD32, 120GB) : 36,000 IOPS (840 EVO) < 88,000 IOPS (850 EVO)

Enhanced RAPID mode

If you need to kick into high gear, the RAPID mode puts the pedal to the metal - just like shifting gears in a car. Magician software gives you the ability to gain twice performance when shifting to the RAPID mode* by processing data on a system level using free PC memory (DRAM) as cache. The maximum memory in RAPID mode has increased from 1GB, in the previous version, to up to 4GB with the 850 EVO when implementing 16GB of DRAM, for an enhanced UX. You'll experience higher performance and more efficient command processing, depending on your PC's memory, which improves further with repetitive tasks. With accelerated speeds, you can vastly improve queue depth (QD) 1 random write performance to almost the same level as QD32 - achieving blazing-fast speeds.

* PCMark7 RAW (250GB) : 7,500 < 15,000 (RAPID mode)

Worry-free reliability with superb power efficiency and security

Choose an SSD that will perform in any circumstance

When it comes to endurance, the 850 EVO won't quit before you do. The 850 EVO delivers enhanced reliability and improved sustained performance - up to 30 percent more than the previous 840 EVO model*. Samsung's V-NAND technology is built to handle up to 150 Terabytes Written (TBW), double that of the 840 EVO**. Plus, it comes with the industry's top-level, five-year limited warranty.

5 year
WARRANTY

	850 EVO (120/250GB)	850 EVO (500GB/1TB)
Total Bytes Written (TBW)	75	150
Warranty (year)	5	

* Sustained Performance (250GB) : 3,300 IOPS (840 EVO) < 4,500 IOPS (850 EVO). Performance was measured after a 12-hour "Random Write" test.
** TBW : 43 (840 EVO) < 75 (850 EVO 120/250GB), 150 (850 EVO 500GB/1TB)

Maintain staying power without consuming power

Efficient Power Management

Samsung is known for its innovations in efficient, power management technologies that help you use an SSD more, longer and more productively. And the 850 EVO is no exception, boasting phenomenally low idle power consumption rates. Considering that SSDs spend most of their time in idle mode, idle power consumption is an extremely important factor in power efficiency. As a matter of fact, the 850 EVO fully supports the sleep mode on the Ultrabook™, consuming only 2m watts of power. Plus, it offers higher performance while consuming 25 percent less power* during write operations than the 840 EVO. The efficient power management of the 850 EVO has become possible thanks to its 3D V-NAND technology, which consumes half the power of a 2D planar NAND.

25%

840 EVO

850 EVO Series

* Power (250GB): 3.2 Watt (840 EVO) > 2.4 Watt (850 EVO)

Protect your valuable data without compromising performance

Data Security

When you travel with your laptop, you need to safeguard not only your PC's hardware, but your personal data, as well. If your laptop is equipped with the 850 EVO, you can rest easy. The 850 EVO's Self-Encrypting Drive (SED) technology will help keep your laptop safe, even if you lose it. The drive includes an AES-256-bit hardware-based, full-disk encryption engine that secures your data without performance degradation typically experienced with software-based encryption. The SED technology complies with the Trusted Computing Group (TCG) Opal v2.0 standards, protecting Physical Security ID (PSID), and is compatible with the Microsoft® eDrive Institute of Electrical and Electronics Engineers® (IEEE) 1667 protocol. Samsung offers three security features you can choose from to suit your specific needs. Plus, you can erase or initialize data with the crypto erase service through customer service.

Dynamic Thermal Guard

When you're totally immersed in your work or enthralled in a competitive video game, the last thing you want to face is for your computer to overheat. However, the 850 EVO won't let that happen thanks to its Dynamic Thermal Guard protection, which monitors and maintains the drive's optimal operating temperature. The throttle feature automatically drops the SSD's temperature when it is necessary to protect your data and ensure the responsiveness you expect. It keeps your PC cool, even if you overwork it - and you'll keep your cool, too.

Variety and seamless integration from a respected leader in consumer SSDs

Get the fit that's just right for your device

We all have different devices and sometimes one size doesn't fit all. Don't worry. The 850 EVO comes in a variety of form factors so you can get the one that's just right for your needs. Choose from 2.5 inch, mSATA and M.2 for convenient, optimized integration with your device.

Desktop

EVO *2.5 inch*

EVO *mSATA*

EVO *M.2*

Laptop / Ultra Thin PC

Tablet

Achieve optimal integration with components that work flawlessly together

The NAND flash memory, the controller, the DRAM and the firmware are the four most crucial components of any SSD. And the integration of each of these components is critically important in designing a high-quality, long-lasting SSD you can rely on. Samsung is one of few manufacturers that actually design all four of these components in-house. And among those who do, Samsung is the one with the most experience in the SSD market. Samsung has intimate knowledge of every component and its parts. Therefore, it can fine-tune them at each stage of development to ensure that they work seamlessly together. The result is the enhanced performance with a 32-layer 3D V-NAND flash memory, lower power consumption with up to 1GB LPDDR2 DRAM cache memory, and improved energy-efficiency controller and firmware.

- 32-layer 3D V-NAND flash memory
- MGX/MEX Controller
- Max 1GB LPDDR2 DRAM cache memory
- Firmware

All components are designded & produced in Samsung

Media Reviews

TweakTown

It's difficult to even call the new EVO a mainstream SSD since the performance, endurance, and warranty are in line with flagship products from other companies. Samsung set the bar very high for the mainstream SSD market.
TweakTown

RECOMMENDED BY ANANDTECH

Samsung hasn't stopped impressing me in the SSD space. The 850 EVO is yet another showcase of Samsung's engineering talent and truth to be told there is a lot of good in the 850 EVO.
ANANDTECH

Against competitors, Samsung's NAND technology is not only superior in performance and endurance, but it's also at least 6-12 months ahead of everyone else.
As for the Samsung 850 EVO, personally I see it being the best mainstream drive on the market at least until 2H2015. It has everything most consumers would want or need from a SSD.
Custom PC

Small file transfers with low queues depths, which is what you'd expect to see with most client workloads, were also very good. If you go back and look at all of the numbers, the Samsung SSD 850 EVO is a clear winner in terms of performance. You can't ask for much more in a solid state drive.
HOT hardware

It would be fair to say we are big fans of Samsung SSDs, but that comes from experience.
Hardware Heaven

Product Lineup

Density	Model Name				Box Contents
	2.5 inch - Basic	2.5 inch - Installation*	mSATA	M.2	
120GB	MZ-75E120BW (BA, BE, B/KR, B/CN)	MZ-75E120RW	MZ-M5E120BW	MZ-N5E120	Samsung SSD 850 EVO 120GB Warranty statement Installation guide Software CD
250GB	MZ-75E250BW (BA, BE, B/KR, B/CN)	MZ-75E250RW	MZ-M5E250BW	MZ-N5E250	Samsung SSD 850 EVO 250GB Warranty statement Installation guide Software CD
500GB	MZ-75E500BW (BA, BE, B/KR, B/CN)	MZ-75E500RW	MZ-M5E500BW	MZ-N5E500	Samsung SSD 850 EVO 500GB Warranty statement Installation guide Software CD
1TB (1,000GB)	MZ-75E1T0BW (BA, BE, B/KR, B/CN)	N/A	MZ-M5E1T0BW	N/A	Samsung SSD 850 EVO 1TB Warranty statement Installation guide Software CD

* Installation Kit (incld. SATA to USB 3.0 connector & Spacer)

Package Set

| 2.5 inch - Basic | 2.5 inch - Installation Kit | mSATA | M.2 |

Technical Specifications

	Samsung SSD 850 EVO		
Form Factor	2.5 inch	mSATA	M.2
Application	Client PCs		
Capacity *	120, 250, 500, 1000GB (1GB=1 Billionbyte by IDEMA)		120, 250, 500GB (1GB=1 Billionbyte by IDEMA)
Interface	SATA 6Gb/s Interface, compatible with SATA 3Gb/s & SATA 1.5Gb/s interface		
Dimension (WxHxD)	100 x 69.85 x 6.8 (mm)	(29.85±0.15) x (50.80±0.15) x Max 3.85 (mm)	Max 80.15 x Max 22.15 x Max 2.38 (mm)
Weight	Max. 66.0g	Max. 8.5g	Max. 7g
Storage Memory	Samsung 32 layer 3D V-NAND		
Controller	120, 250, 500GB : Samsung MGX Controller / 1000GB (1TB) : Samsung MEX Controller		
Cache Memory	120GB : Samsung 256 MB Low Power DDR3 SDRAM / 250, 500GB : Samsung 512MB Low Power DDR3 SDRAM / 1000GB (1TB) : Samsung 1GB Low Power DDR2 SDRAM	120, 250, 500GB : Samsung 512MB Low Power DDR3 SDRAM / 1000GB (1TB) : Samsung 1GB Low Power DDR2 SDRAM	Samsung 512MB Low Power DDR3 SDRAM
TRIM Support	TRIM Supported		
S.M.A.R.T Support	S.M.A.R.T Supported		
GC (Garbage Collection)	Auto Garbage Collection Algorithm		
Encryption Support	AES 256 bit Encryption (Class 0), TCG/Opal, IEEE1667 (Encrypted drive)		
WWN Support	World Wide Name supported		
Device Sleep Mode Support	Yes		
Sequential Read	Up to 540 MB/sec		
Sequential Write **	Up to 520 MB/sec		
Random Read (4KB, QD32) **	120GB : Up to 94,000 IOPS / 250GB : Up to 97,000 IOPS / 500, 1000GB (1TB) : Up to 98,000 IOPS	120GB : Up to 95,000 IOPS / 250, 500, 1000GB (1TB) : Up to 97,000 IOPS	Up to 97,000 IOPS
Random Write (4KB, QD32) **	120, 250GB : Up to 88,000 IOPS 500, 1000GB (1TB) : Up to 90,000 IOPS	Up to 88,000 IOPS	Up to 89,000 IOPS
Random Read (4KB, QD1) **	Up to 10,000 IOPS		
Random Write (4KB, QD1) **	Up to 40,000 IOPS		
Average Power Consumption (system level)	*Average : 4.0 Watts *Maximum : 4.4 Watts (1,000GB) (Burst mode)	*Average : 4.3 Watts *Maximum : 5.7 Watts (1,000GB) (Burst mode)	*Average : 3.5 Watts *Maximum : 4.7 Watts (500GB) (Burst mode)
Power consumption (Idle) ***	Max. 50mWatts		
Allowable Voltage	5V ± 5% Allowable voltage		
Reliability (MTBF)	1.5 Million Hours Reliability (MTBF)		
Operating Temperature	0 - 70ºC Operating Temperature		
Shock	1,500G & 0.5ms (Half sine)		
Management SW	Magician Software for SSD management		
Warranty	120, 250GB : 5 Years Limited Warranty or 75TBW Limited Warranty / 500GB, 1000GB (1TB) : 5 Years Limited Warranty or 150TBW Limited Warranty		

*   Sequential performance measurements based on CrystalDiskMark v.3.0.1. Random performance measurements based on Iometer 2010.
    Performance may vary based on SSD's firmware version, system hardware & configuration. Test system configuration :
    Intel Core i7-4790K @ 4.0GHz, DDR3 1600MHz 8GB, OS – Windows7 Ultimate x64 SP1, IRST 13.0.3.1001, Chipset : Intel® Z97

** Sequential Write performance measurements based on TurboWrite technology. The sequential write performances after TurboWrite region are
    150MB/s (120GB), 300MB/s (500GB) and 520MB/s (1TB).

*** Power consumption measured with IOmeter 1.1.0 with Intel i7-4770K, DDR3 8GB, Intel® DH87RL OS- Windows7 Ultimate x64 SP1

About Samsung Electronics Co., Ltd.

Samsung Electronics Co., Ltd. is a global leader in technology, opening new possibilities for people everywhere. Through relentless innovation and discovery, we are transforming the worlds of TVs, smartphones, tablets, PCs, cameras, home appliances, printers, LTE systems, medical devices, semiconductors and LED solutions. We employ 286,000 people across 80 countries with annual sales of US$216.7 billion. To discover more, please visit www.samsung.com

For more information

For more information, please visit www.samsung.com/ssd or www.samsungssd.com
To download the latest software & manuals, please visit www.samsung.com/samsungssd