Samsung SSD 840 EVO mSATA

Data Sheet, Rev.1.1

Summary

- SATA 6Gb/s SSD for Desktop & Ultra-thin Laptop PC
- mSATA (Fully Mini PCIe) type
- Samsung 3-core MEX controller
- Samsung 1x nm Toggle DDR 2.0 NAND Flash memory
- Up to 1GB Samsung Low Power DDR2 SDRAM cache memory
- Samsung Magician Software for SSD management
- Samsung Data Migration Software

The must-have solution for your PC upgrade

  The SSD evolution has arrived with the Samsung SSD 840 EVO mSATA. Combining the best SSD technology from Samsung, 840 EVO mSATA delivers a superior computing experience. More speed, more reliability and much easier upgrade tools. The 840 EVO mSATA also expands your experience with ultra thin PCs and desktops by utilizing the mSATA slot.

Faster performance for everyday use

  The market-leading 840 Series SSD   has been significantly improved   with in the 840 EVO mSATA. Samsung's new TurboWrite technology delivers dramatically faster sequential write performance. And, with upgrades to NAND, a new controller and firmware, the 840 EVO mSATA has superfast responsiveness under everyday workloads.

Proven quality and trusted reliability

Samsung's unparalleled end-to-end integration allows us to deliver a reliable, high-performance mSATA SSD as well as a 2.5" line-up. The upgraded firmware(EXT41B6Q & EXT0BB6Q) and advanced signal processing guarantees same level of endurance and reliability. The 840EVO mSATA's ultra-low power consumption also helps extend laptop battery life longer than before. Compared to the 2.5" form factor, 840 EVO mSATA provides "Device sleep"(DEVSLP) mode for ultra-thin laptop PC and high-end main board of desktops as well. In addition, Samsung's "Dynamic Thermal Guard" algorithm in the 840 EVO mSATA maintains optimal operating temperature. Samsung 840 EVO mSATA is backed with the same 3-year limited warranty as 2.5" line-up.

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Samsung Magician Software

Samsung Magician eliminates the confusion and uncertainties of SSD management, making it simple for users to maximize the performance and lifetime of a Samsung SSD. In addition to its performance optimization features, Magician (as of version 4.3) provides840 EVO mSATA users with the option to enable RAPID mode (Real-time Accelerated Processing of Input-output Data) – an innovative performance enhancement option that processes data on a system level by using free DRAM memory as cache .Once enabled on the Magician, RAPID mode provides an overall PC performance boost.

More Powerful Data Security Solutions

840 EVO mSATA's Self-Encryption Drive(SED) security technology will help keep your data safe at all times. The drive includes an AES 256-bit Full Disk Encryption (FDE) and PSID which are hardware-based encryption engine to ensure that your personal data remain secure. Being a hardware-based solution, the encryption engine secures your data without any performance degradation   which may occur while using a software-based encryption. Furthermore, 840 EVO mSATA is compatible with TCG/Opal 2.0 and IEEE1667.

TCG/Opal specification offers authentication, configuration and policy management for government and large enterprises. Also, for IEEE1667 standard, you can use encrypted drive as Microsoft®'s bitlocker.

Also, PSID(Physical Security ID) on the label protects your data on the drive by executing a cryptographic erase and returning it to its factory status instantly while permanently reducing data disposal costs.

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Technical Specifications

Samsung SSD 840 EVO mSATA			
Usage Application	Client PCs (Ultra-thin PCs compatible)		
Capacity	120GB, 250GB, 500GB,1TB		
Dimensions(LxWxH)	(29.85±0.15) x (50.80±0.15) x Max 3.85 (mm)		
Interface	SATA 6Gb/s (compatible with SATA 3Gb/s and SATA 1.5Gb/s)		
Form Factor	mSATA		
Controller	Samsung 3-core MEX Controller		
NAND Flash Memory	1x nm Samsung Toggle DDR 2.0 NAND Flash Memory (400Mbps)		
DRAM Cache Memory	256MB (120GB) or 512MB(250GB&500GB) or 1GB (1TB) LPDDR2		
Performance*	Sequential Read:	Max. 540 MB/s	
	Sequential Write**:	Max. 520 MB/s	
	4KB Random Read (QD1):	Max. 10,000 IOPS	
	4KB Random Write(QD1):	Max. 40,000 IOPS(250GB/500GB/1TB) Max. 37,000 IOPS(120GB)	
	4KB Random Read(QD32):	Max. 97,000 IOPS (250GB/500GB/1TB) Max. 95,000 IOPS (120GB)	
	4KB Random Write(QD32):	Max. 88,000 IOPS (500GB/1TB) Max. 71,000 IOPS (250GB) Max. 37,000 IOPS (120GB)	
TRIM Support	Yes (Requires OS Support)		
Garbage Collection	Yes		
S.M.A.R.T	Yes		
Security	AES 256-bit Full Disk Encryption (FDE) Class 0/TCG Opal 2.0/ IEEE1667 compliant (SED)		
Weight	Max. 10g (1TB)		
Reliability	MTBF: 1.5 million hours		
Power Consumption	Average***(Typical) : 0.08W (120GB/250GB), 0.14W (500GB), 0.21W (1TB) Idle (Typical, DIPM ON) : 0.04W (120GB/250GB), 0.05W (500GB/1TB) Maximum**** : 2.18W (120GB), 2.93W (250GB), 3.64W (500GB), 3.84W (1TB) Device Sleep : 2mW		
Temperature	Operating:	0°C to 70°C	
	Non-Operating:	-40°C to 85°C	
Humidity	5% to 95%, non-condensing		
Vibration	Non-Operating:	20~2000Hz, 20G	
Shock	Non-Operating:	1500G , duration 0.5msec, 3 axis	
Warranty	3 years limited		

System Configuration :   Intel Core i5-3210 @ 2.5GHz, 4GB; OS - Windows 7 Ultimate x64 SP1; IRST 11.2, MS performance guide pre-condition.

*   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

**   Sequential Write performance measurements reflect TurboWrite operation. After TurboWrite, Sequential Write performance measures as Max. 150MB/s (120GB), 290MB/s(250GB) and 380MB/s(500GB and higher capacities)

*** Power consumption measured with MobileMark 2007 in Windows 7. Values calculated using laptop computer and represent system-level power consumption.

**** Power consumption measured during 128KB sequential Write with Queue depth 32 workload for 1minute period using IOmeter.

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Product Lineup

Density	Model Name	Box Contents	Model Code
120 GB	MZ-MTE120	Basic (SSD Only)	MZ-MTE120BW
250 GB	MZ-MTE250	Basic (SSD Only)	MZ-MTE250BW
500 GB	MZ-MTE500	Basic (SSD Only)	MZ-MTE500BW
1TB	MZ-MTE1T0	Basic (SSD Only)	MZ-MTE1T0BW

Contents

840 EVO mSATA Basic model iclude

- Samsung SSD 840 EVO mSATA
- SSD Warranty Summary and Manual
- Samsung SSD Activated Label

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

Revision History

Date	Revision	Description
January 2014	1.1	Power consumption details revised
December 2013	1.0	Initial release

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