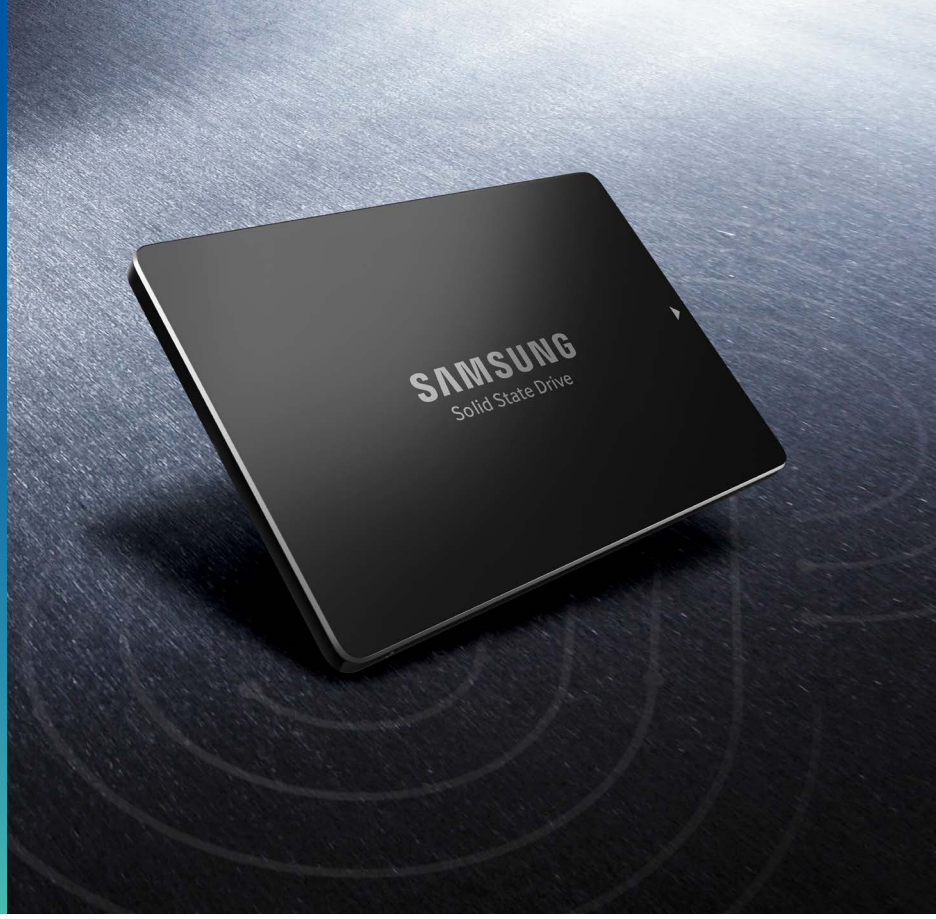
Samsung PM863a SATA SSD

Keep ahead of ever-increasing data demands

Product Brief



Highlights

Capacity: Up to 3.84 TB

Performance: Sequential R/W up to 520/480 MB/s

Power ef ciency: Active R/W 3 W, Max. 4W, Idle 1.3 W

Endurance: UBER[1]**:** 1 sector per 10^{17} bits read

Overview

With the rise of mobile, social and cloud computing, data centers are turning to SSDs to meet big data demands. Samsung's 3rd-generation V-NAND technology provides high capacities up to 3.84 TB in the same 2.5-inch form factor. Boasting exceptional performance, endurance and power efficiency, the new Samsung SATA 2.5-inch PM863a delivers superb IOPS consistency, latency and QoS (quality of service). The PM863a provides the essentials for 24/7 data center environments. It's increasingly being adopted in all-flash array, JBOF (just bunch of flash) and HCIS (hyperconverged integrated systems) with qualified compatibility in the PM863.

Robust performance and low TCO

The PM863a is designed for mixed workload data center applications, such as CDNs (content delivery networks), streaming and web servers. With sequential R/W speeds up to 520/480 MB/s and random R/W speeds up to 97K/24K IOPS, it delivers robust performance for heavy workloads. The PM863a maintains a strong IOPS consistency[2] above 99% in random read performance and superior performance in random write speeds. Generating a better performance-to-power ratio than HDDs, the PM863a reduces data center operating costs, resulting in lower TCO[3].

Safeguard priceless data with powerful features

Enhanced data integrity

The PM863a has a low probability of data corruption. End-to-end protection keeps data consistent along the entire data transfer path and Power Loss Protection safeguards data in the write cache in the event of a power failure. Dynamic Thermal Guard monitors the SSD's temperature to help prevent thermal shutdown.

Self-encrypted drives

The PM863a protects data with AES 256-bit hardware-based encryption without the performance degradation often experienced with software-based encryption.

1. UBER (Uncorrectable Bit Error Rate) is a metric for the rate of occurrence of data errors, equal to the number of data errors per bits read as specified in the JESD218 document of JEDEC standard. For the enterprise application, JEDEC recommends that UBER be below 10-16.
2. IOPS consistency is measured using FIO with queue depth 32. IOPS consistency (%) = (99.9% IOPS)/(Average IOPS) x 100.
3. TCO (total cost of ownership) results can vary depending upon the application and conditions of the contract.

SAMSUNG

Technical specifications

A technology leader in innovation

Samsung designs and integrates a wide array of critical SSD components in house, including the DRAM, NAND, controller and firmware. Based on their intimate knowledge of every component, Samsung fine-tunes each element, enabling them to work in perfect synergy.

		MZ7LM240HMHQ	MZ7LM480HMHQ	MZ7LM960HMJP	MZ7LM1T9HMJP	MZ7LM3T8HMLP
Capacity[1]		240 GB	480 GB	960 GB	1,920 GB	3,840 GB
Performance[2]	**Seq. read (128 KB)**	330 MB/s	520 MB/s	520 MB/s	520 MB/s	520 MB/s
	Seq. write (128 KB)	300 MB/s	480 MB/s	480 MB/s	480 MB/s	480 MB/s
	Rand. read (4KB, QD32)	86K IOPS	97K IOPS	97K IOPS	97K IOPS	97K IOPS
	Rand. write (4KB, QD32)	9K IOPS	16K IOPS	24K IOPS	24K IOPS	24K IOPS
Reliability	**TBW**[3]	341 TB	683 TB	1,366 TB	2,733 TB	5,466 TB
	DWPD[4]	1.3 (3 Years)				
	MTBF[5]	2,000,000 hours				
	UBER[6]	1 sector per 10^{17} bits read				
Form factor		2.5 inch 7mmT				
Interface		SATA 6.0 Gbps				
Dimension (WxDxH)		Max. 100.2 x 69.85 x 6.8 (mm)				
Weight		Max. 60 g				
NAND type		Samsung V-NAND				
Encryption support		AES 256-bit Encryption Engine				
Allowable voltage		5.0 V ± 5%				
Average power consumption[7]		Active read (Typ.) 3 W, Active write Max. 4 W, Idle 1.3 W				
Operating temperature		0 - 70°C				
Shock		1500 G, duration 0.5 ms, Half Sine Wave				

1. 1 GB = 1 Billion bytes by IDEMA. Actual usable capacity may be less (due to formatting, partitioning, operating system, applications or otherwise).
2. Actual performance may vary depending on use conditions and environment.
   1) Performance measured using IOMeter 2006 with queue depth 32, C216 Intel® SATA 6G port. 2) Measurements are performed on whole LBA range.
   3) Write cache enabled. 4) 1 MB/sec = 1,048,576 bytes/sec was used in sequential performance.
3. TeraBytes Written(TBW) is measured while running 100 % random 4 KB writes across the entire SSD.(TBW = DWPD x 365 x 3 x User capacity).
4. Drive Write Per Day (DWPD)
5. MTBF is Mean Time Between Failure. As same word, annual failure ratio is 0.438%.
6. Uncorrectable Bit Error Rate (UBER) is a metric for the rate of occurrence of data errors, equal to the number of data errors per bits read as specified in the JESD218 document of JEDEC standard. For the enterprise application, JEDEC recommends that UBER shall be below 10-16.
7. Actual power consumption may vary depending on system hardware & configuration. Active write power is measured on 128 KB sequential write and active read power is measured on 4 KB random read.

For more information

For more information about the Samsung PM863a NVMe SSD, visit **www.samsung.com/semiconductor**.

About Samsung Electronics Co., Ltd.

Samsung inspires the world and shapes the future with transformative ideas and technologies. The company is redefining the worlds of TVs, smartphones, wearable devices, tablets, digital appliances, network systems, and memory, system LSI and LED solutions. For the latest news, please visit the Samsung Newsroom at **news.samsung.com.**

Samsung Electronics Co., Ltd.
129 Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do 16677, Korea **www.samsung.com** 2017-01

SAMSUNG