

Storage for the Next-Generation PC

Highlights

Extreme Performance

Delivers over up to 7000MB/s sequential and 1M IOPS random read speeds through the PCIe Gen4 interface.

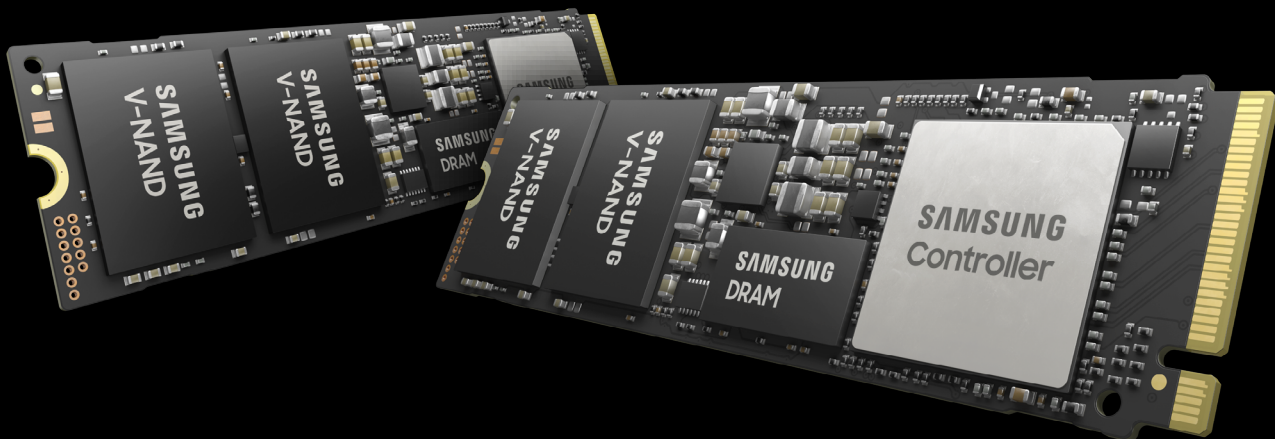
Optimized Design

Utilizes Samsung's in-house designed V-NAND, proprietary Elpis controller, and customized firmware.

OEM Features

Protects data confidentiality and integrity with AES 256-bit encryption and TCG encryption management.

Delivers intelligent thermal management and power efficiency to ensure consistent performance and endurance.



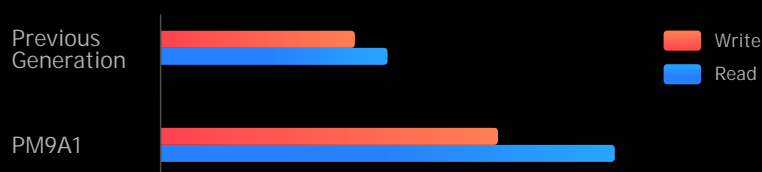
Blazing fast performance is becoming the new reality in the client computing environment with the latest generation of client processors transitioning to PCIe Gen4 as the interface for data transfers to the CPU. Samsung's PM9A1 allows end users to fully realize the benefits of this faster standard, delivering a significant and noticeable improvement in performance over the prior generation for the power PC user.

A specialized SSD designed with demanding workload needs in mind, Samsung's PM9A1 offers industry-leading performance, while meeting OEM requirements for data security, thermal control, power management. Samsung's PM9A1 drive is suited for a wide range of high-end PC applications, such as gaming, content creation, and data analytics - data-intensive and demanding environments where performance is paramount.

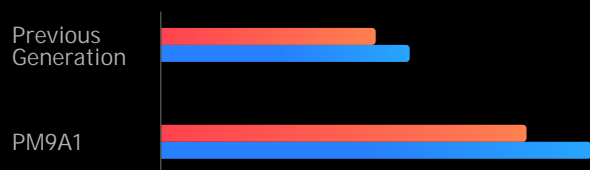
High Performance

The newest offerings from CPU vendors are adopting the PCIe 4.0 interface for storage and other peripherals, and with good reason, as this new standard offers twice the bandwidth of PCIe Gen3. The PM9A1, the industry's first PCIe Gen4 drive delivered to the OEM market, maximizes the potential of the latest generation of processors. It offers up to 100% improvement in sequential read speeds compared to high-end Gen3 drives, enabling faster file operations when working with data intensive use cases such as video editing, 3D rendering and simulations, and gaming. It also boosts random read speeds by up to 50%, cutting downloading times and improving system response.

Sequential Performance (MByte/second)



Random Performance (K IOPS)



Optimized Design

Being a vertically integrated supplier of SSDs, Samsung can deliver the highest quality product and provide the highest level of support. All the key components including DRAM, V-NAND, and controller are developed in-house. The PM9A1 uses Samsung's sixth generation V-NAND, which has 12% faster read & 20% faster write speeds, with 15% reduced power consumption compared to the prior generation.

OEM Features

The PM9A1 has been designed for stringent OEM specifications. It provides industry leading thermal management through the controller's nickel coating, heat spreader labeling, and Dynamic Thermal Guard, Samsung's own thermal control algorithm. In addition, the PM9A1 delivers top performance while maintaining a power envelope on par with prior generation Gen3 drives. For data security, the PM9A1 comes with hardware based AES-XTS 256-bit Encryption and is TCG OPAL (v2.1) Compliant for SED.

Samsung PM9A1 Specifications

Storage Capacity	256GB	512GB	1TB	2TB
Host Interface	PCIe Gen 4 x4			
Spec Compliance	NVMe spec rev. 1.3, PCI Express Base Specification Revision 4.0			
NAND Flash Memory	Samsung V-NAND			
Power Consumption (Active/Idle)	5.8W Active 35mW Idle			
Uncorrectable Bit Error Rate (UBER)	<1 sector per 10 ¹⁵ bits read			
Mean Time Between Failure (MTBF)	1,500,000 Hours			
Endurance	150 TBW	300 TBW	600 TBW	1200 TBW
Sequential Read	6,400 MB/s	6,900 MB/s	7,000 MB/s	7,000 MB/s
Sequential Write	2,700 MB/s	5,000 MB/s	5,100 MB/s	5,200 MB/s
Random Read	500,000 IOPS	800,000 IOPS	1,000,000 IOPS	1,000,000 IOPS
Random Write	600,000 IOPS	800,000 IOPS	850,000 IOPS	850,000 IOPS
Physical Dimensions	22x80 mm			
Encryption Supported	TCG OPAL (v2.1) Compliant for SED			
Bytes per Sector	512MB			
Operating Temperature	0 to 70 C			

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