SiliconMotion

SM8008 Solution

Power Efficient PCIe Gen5 NVMe Enterprise SSD Controller for Data Center Boot Drives

The SM8008 is a high-performance, power-optimized PCIe Gen5 x4 NVMe enterprise SSD controller designed for datacenter boot SSDs and power-sensitive enterprise storage applications. Built on TSMC 6nm process technology, SM8008 delivers an optimal balance of performance, power efficiency, reliability, and enterprise-grade security while partial supporting OCP Hyperscale NVMe Boot SSD Specification Version 1.0 and NVMe 2.0 specifications.

Featuring an 8-channel NAND architecture with support for ONFI and Toggle DDR 5.0 interfaces up to 3600MT/s, SM8008 delivers up to 14GB/s sequential throughput and over 2.3M IOPS random performance, while maintaining active power consumption under 5W. The single inline DDR4 or LPDDR4 DRAM architecture further optimizes system power efficiency and BOM cost, making it ideal for large-scale enterprise deployments.

Powered by Silicon Motion's latest NANDCommand™ technology and an advanced LDPC ECC engine, SM8008 ensures end-to-end data path protection, high endurance, and predictable QoS across TLC NAND configurations. A comprehensive enterprise security framework is integrated to protect data, firmware, and platform integrity while supporting future security requirements.

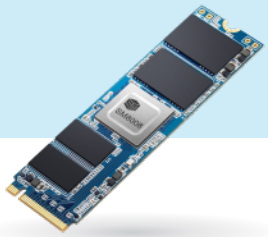
KEY FEATURES

Enterprise Security and Compliance

SM8008 integrates enterprise-grade security features, including TCG Opal 2.0 compliant encryption, secure boot, firmware authentication, and hardware-accelerated cryptography. Support for DICE, SPDM, and CNSA 2.0 readiness ensures long-term security compliance for datacenter and enterprise environments.

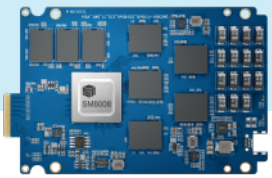
Optimized for Datacenter and Boot SSD Applications

With best-in-class power efficiency, single inline DRAM architecture, and support for OCP Datacenter NVMe SSD specifications, SM8008 is optimized for boot drives and power-sensitive enterprise storage across M.2, U.2, and EDSFF form factors.



M.2

U.2



E3.S

E1.S (9.5/15/25 mm)

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Power Efficient PCIe Gen5 x4 NVMe Enterprise SSD Controller

Features

Host Interface	PCIe Gen5 x4
Specifications	• NVMe 2.0a protocol support • OCP Hyperscale NVMe Boot SSD Specification Version 1.0 compliant (partial)
NAND Interface	8 NAND channels supporting ONFI and Toggle DDR 5.0 up to 3,600MT/s
DRAM Interface	DDR4-3200 and LPDDR4-3200 with inline ECC support
Performance	• Up to 14GB/s sequential performance with active power under 5W • 2.3M IOPS (4K) Random IOs
Industry leading Security	• TCG Opal 2.0, AES 256, SHA2 512, RSA-3072b, DICE, SPDM, Secure Boot • NANDCommand™ maximizing the Enterprise performance of next generation NAND geometries with exceptional LDPC error correction and endurance extension for QLC and beyond
Enterprise Features	• Supports NVMe Management Interface Basic Management Command (NVMe-MI v)1.2 • Supporting Advanced Data Placement Technologies: SR-IOV with 64 Virtual Functions • CNSA 2.0 support • Up to 16TB

Product Ordering Information

Part Number	Description	Package
SM800GX080000-AC	PCIe Gen 5 x4, 8CH SSD Controller	15mm x 15mm

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