



SM2264

Ultra-High Performance PCIe Gen4 x4 NVMe 1.4 SSD Controller

The SM2264 is the latest PCIe NVMe Gen4 x4 SSD controller offers a new high level of performance in next-generation SSD applications, from mainstream clients to emerging small form factor SSDs, Targeted for performance and automotive SSDs, the SM2264 features a quad-core ARM R8 CPU with four lanes of 16Gb/s PCIe data flow and supports eight NAND channels with up to 1,600 MT/s per channel. Its advanced architecture, based on 12nm process technology, enables high throughput, lower power consumption, and rigorous data protection, providing ultra-high performance and reliability in a cost-effective PCIe NVMe SSD solution.

The SM2264 is a complete merchant ASIC/firmware solution which supports 3D NAND from all major NAND suppliers. Leveraging Silicon Motion's proprietary NANDXtend® error-correcting code (ECC) technology, the SM2264 enhances the endurance and data retention of 3D NAND, and provides comprehensive protection of data integrity through SRAM ECC and End-to-End data path protection. The SM2264 is also ideal for automotive storage offering built-in SR-IOV capability providing a direct, high-speed PCIe interface supporting to up to eight Virtual Machines.

KEY FEATURES

- **Ultra High Performance**
 - PCIe Gen4 x4
 - 8 NAND channels @ 1,600 MT/s
- **Best-in-class Low Power**
 - PS3: 25mW
 - PS4 (L1.2): 1.6mW
- **Datapath Protection**
 - End to end data protection
 - SRAM ECC
- **NANDXtend® ECC Technology**
 - 4KB codeword LDPC
 - Embedded programmable RAID



SPECIFICATIONS

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Host Interface	PCIe Gen4 x4
PCIe Protocol	NVMe 1.4
Processor	Quad-core ARM Cortex R8 CPU
NAND Flash Channel	8
CE/Channel	8CH/64CE
Max Performance	Sequential Read: 7,500 MB/s Sequential Write: 7,000 MB/s Random Read: 1,300K IOPS Random Write: 1,200K IOPS
NAND Flash Support	ONFI4.1/3.0 and Toggle3.0/2.0 NV-DDR3 up to 1,600MT/s
DRAM Interface	Supports DDR4, LPDDR4 and LPDDR4X 32-bit data bus width 2 chip enable pins
Security	Real time full drive encryption with AES 128/256 TCG Opal 2.0 compliant Hardware SHA 256 and TRNG
Temperature Support	c-temp: 0°C to 70°C i-temp: -40°C to 85°C
Package	841-ball FCBGA (15mm x 15mm)