



SM2268XT2

High Performance with Lower Power PCIe Gen4 x4 NVMe 2.0 SSD Controller

The SM2268XT2, Silicon Motion's new-generation PCIe NVMe SSD controller, is ideally suited for smaller form factor and low-power client SSDs – meeting the customer need for faster data access and higher throughput.

Superior Performance

The SM2268XT2 controller is engineered with the latest System Architecture and Host Memory Buffer (HMB) function, making it ideal for DRAM-less SSD applications. With a PCIe Gen 4 interface offering 16GT/s x4 lanes bandwidth and four NAND flash channels capable of flexible data rates up to 3,600 MT/s per channel, it's ready to adapt to future NAND I/O speed advancements. Achieving sequential read/write speeds of up to 7.4GB/s and 6.7GB/s, along with 1,200K/1,200K IOPS of random read/write, the SM2268XT2 SSD controller ensures exceptional performance.

NANDXtend® ECC Technology with Innovative 4K+LDPC Engine

Benefited from the innovative 4K+ LDPC error-correction technologies, the SM2268XT2 provides stronger error recovery capability, enhances comprehensive data integrity and upgrades correction capability for next-generation 3D NAND technology that will enable faster, higher-capacity storage solutions without compromising throughput and latency. The built-in powerful RAID engine offers the flexibility for different RAID schemes based on the NAND Flash requirements. Thanks to the high-efficiency seamless cooperation between LDPC code, RAID engine, and firmware algorithms, the SM2268XT2 achieves a balance of outrageous throughput and reduced power consumption for elevated efficiency, which is suitable for Notebook PCs.

Intelligent Low-Power Scheme

The SM2268XT2 leverages an advanced 12nm process, thereby contributing to lower power consumption, and perfectly fits the needs of small form factor SSDs. It features a proprietary built-in smart clock gating mechanism, which intelligently and automatically powers down unused blocks, ensuring highly efficient power consumption in real time. Fully compliant with PC, PCIe, and NVMe standards, the SM2268XT2 can operate in multiple power states based on host command requests and power consumption considerations. The controller's capability of managing power transitions between different power states is widely tested and verified in various PC platforms.

KEY FEATURES

- **High Performance**
 - PCIe Gen4 x4
 - 4 NAND channels up to 3,600MT/s
 - **NANDXtend® ECC Technology**
 - Innovative 4K+ LDPC engine
 - Embedded programmable RAID
- **Data Integrity and Reliability**
 - HMB data path protection
 - SRAM ECC & CRC parity
 - **Best-in-class Low Power**
 - PS3 <4mW
 - PS4 (L1.2) <1.5mW

SPECIFICATIONS

SM2268XT2

Host Interface	PCIe Gen4 x4
PCIe Protocol	NVMe 2.0
Processor	Dual-core Arm® Cortex®-R8 processor
NAND Flash Channel	4
Channel/CE	4CH/16CE
Max Performance	Sequential Read: 7,400 MB/s Sequential Write: 6,700 MB/s Random Read: 1,200K IOPS Random Write: 1,200K IOPS
NAND Flash Support	ONFI 5.0/4.2 and Toggle3.0/2.0 NV-DDR3 up to 3,600 MT/s
Security	Real time full drive encryption with AES 128/256 TCG Opal 2.0 compliant Hardware SHA 384/256 and TRNG Secure Boot for FW authentication
Advanced Features	Built-in UART function Attestation, Secure Boot Supported
Package	247-balls FCCSP (7.7mm x 11mm)