The SM2258XT is a high-performance SATA 6Gb/s SSD controller ideally suited for cost-effective, small form factor and low power client and industrial storage solutions for PCs, Ultrabooks, Tablet PCs, and other embedded applications. The single-chip, DRAM-less design reduced BOM cost without compromising performance while enabling 2.5”, 1.8”, slim SATA(MO-297), mSATA(MO-300) and M.2 form factor SSDs. Its ultra-low power consumption effectively extends battery life and optimizes user experience.

The SM2258XT is a complete merchant ASIC/firmware solution supporting 1z nm TLC and 3D NAND from all major NAND suppliers. Leveraging Silicon Motion's proprietary NANDXtend™ error-correcting code (ECC) technology, the SM2258XT provides a comprehensive data protection and enhances the endurance and retention of TLC NAND, delivering more than three times better durability for TLC SSD.

### KEY FEATURES

- **Ultra High Performance**
  - Sequential Read: 540 MB/s*
  - Sequential Write: 450 MB/s*
  - Random Read: 40,000 IOPS*
  - Random Write: 70,000 IOPS*

- **Best-in-class Low Power**
  - Average power consumption: 50mW (based on MobileMark’12)
  - Slumber < 20mW
  - DEVSLP < 2mW

- **Cost-effective Solution**

- **Available in Commercial and Industrial Grade**

* 240GB SSD with SanDisk 15nm TLC NAND
**FEATURES**

- **Host Interface**
  - Industrial Standard SATA Revision 3.1 compliant
  - Industrial Standard ATA/ATAPI-8 and ACS-2 command compliant
  - Supports SATA interface rate of 6Gb/s (backward compatible to 1.5Gb/s and 3Gb/s)
  - Native Command Queuing up to 32 commands
  - SATA Device Sleep (DEVSLP)
  - Data Set Management command (TRIM)
  - Self-Monitoring, Analysis, and Reporting Technology (S.M.A.R.T.)
  - Supports 28-bit and 48-bit LBA (Logical Block Addressing) mode commands

- **NAND Flash Support**
  - Supports 1z nm TLC and 3D NAND
  - Supports ONFI 3.0, Toggle 2.0 interface, and Asynchronous interface
  - Supports 1.8V/3.3V flash I/O
  - Supports 8KB and 16KB page size
  - Supports 1-plane, 2-plane, and 4-plane operation
  - 4 channel flash interface supports up to 16 NAND flash devices

- **Data Protection and Reliability**
  - Supports ATA8 security feature set
  - Internal data shaping technique increases data endurance
  - StaticDataRefresh™ technology ensures data integrity
  - Early weak block retirement option
  - Global wear leveling algorithm evens program/erase count and maximizes SSD lifespan

- **Architecture**
  - 32-bit RISC CPU
  - High-efficiency 64-bit system bus
  - Automatic sleep and wake-up mechanism to save power
  - Built-in voltage detectors for power failure protection
  - Built-in power-on reset and voltage regulators
  - Built-in temperature sensor for SSD temperature detection
  - Supports JTAG emulator interface, bidirectional UART (RS-232) interface, and I2C

**SPECIFICATIONS**

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