SM2246XT
SATA 6Gb/s DRAM-less SSD Controller

The SM2246XT 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 compromizing 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 SM2246XT fully supports the latest generation NAND in high-speed Toggle, ONFI, or Async mode, enabling high capacity and highly reliable SSDs on the market.

KEY FEATURES

- **Ultra High Performance**
  - Sequential Read: 520 MB/s*
  - Sequential Write: 300 MB/s*
  - Random Read: 28,000 IOPS*
  - Random Write: 65,000 IOPS*

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

- **Package Options**
  - 88-pin QFN: 2-channel flash interface supports up to 4 NAND flash devices
  - 144-ball TFBGA: 4-channel flash interface supports up to 16 NAND flash devices

- **Available in Commercial and Industrial Grade**

* 120GB SSD with Toshiba 19nm MLC

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 1x/1y/1z/2x/2ynm SLC and MLC
- 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-/2-channel flash interface supports up to 16 NAND flash devices

• Data Protection and Reliability

- Supports ATA8 security feature set
- Hardware BCH ECC capable of correcting errors up to 66-bit/1KB
- 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

Host Standards	SATA 6Gb/s
ATA Protocol	ATA-8
Flash I/F	4/2 Channel
CE/Channel	4/2
Commercial Temperature	0°C to +70°C
Industrial Temperature	-40°C to +85°C
Package	144-ball TFBGA 88-pin QFN

SiliconMotion