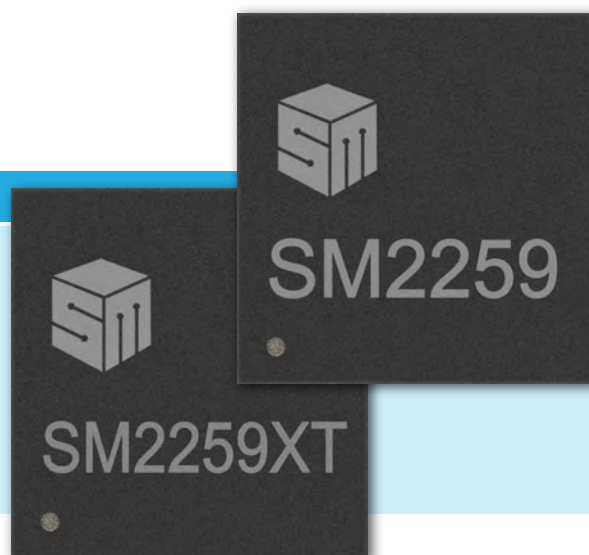


SM2259 / SM2259XT

SATA 6Gb/s SSD Controller
with NANDXtend™ Technology



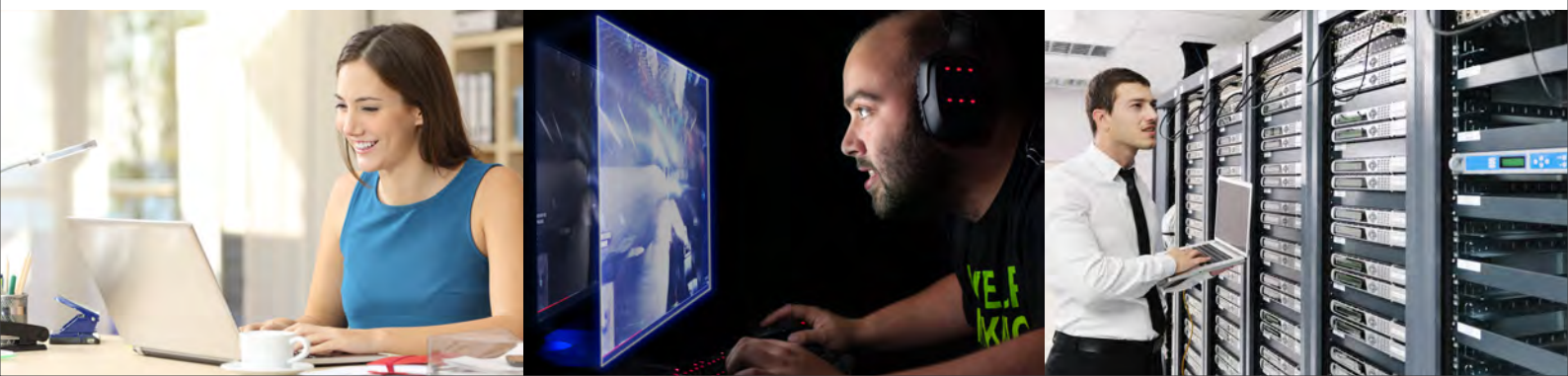
The SM2259 features best-in-class performance and low power consumption for mainstream SATA SSDs, while the DRAM-less SM2259XT reduces BOM cost without compromising performance while enabling 2.5", 1.8", slim SATA(MO-297), mSATA(MO-300) and M.2 form factor SSDs.

The SM2259 and SM2259XT are both 4-channel high-performance SATA 6Gb/s SSD controllers ideally suited for cost-effective, small form factor and low power SSDs for Enterprise PCs, Consumer PCs, CFast cards and industrial storage. Its ultra-low power consumption effectively extends battery life and optimizes user experience. The SM2259 and SM2259XT are complete merchant ASIC/firmware solution supporting 3D NAND Flash from all major NAND suppliers.

Leveraging Silicon Motion's proprietary NANDXtend™ error-correcting code (ECC) technology, the SM2259 and SM2259XT enhance the endurance and retention of 3D NAND. Besides, SM2259 and SM2259XT include such enterprise features such as end-to-end data path protection and SRAM ECC capabilities to ensure the data integrity and reliability. SM2259 and SM2259XT also features advanced Direct-to-TLC and SLC Caching algorithms for optimal sustained performance with TLC and QLC NAND.

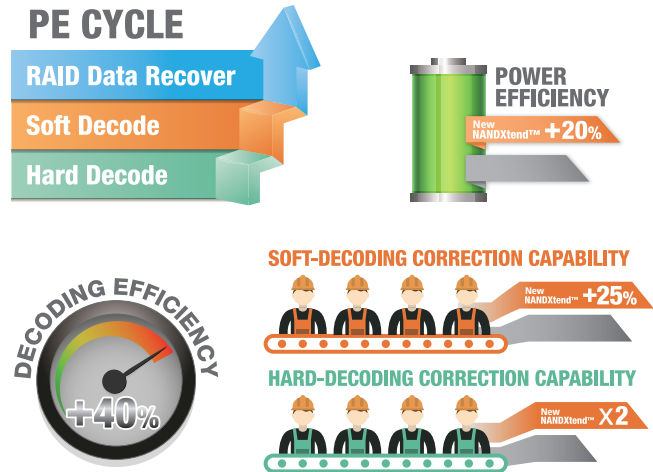
KEY FEATURES

- **Host Interface**
 - Supports SATA interface rate of 6Gb/s
 - Compliant with Industrial Standard SATA Revision 3.1
 - Compliant with Industrial Standard ATA/ATAPI-8 and ACS-3 command
- **Optimal Sustained Performance**
 - Direct-to-TLC and SLC Caching
- **NANDXtend™ ECC Technology**
 - 1KB codeword LDPC Embedded
 - programmable RAID
 - Supports all QLC and TLC NAND
- **Datapath Protection**
 - End to end data protection
 - SRAM ECC



NANDXtend™ Technology

The SM2259 and SM2259XT employs the company's proprietary NANDXtend™ ECC technology consisting of LDPC hard and soft decoding as well as RAID protection that together enhance the P/E cycles of 3D NAND - extending the SSD lifespan and ensuring data integrity. The new generation NANDXtend™ includes 2KB LDPC engine with advanced firmware algorithm delivers higher power efficiency, decoding efficiency and correction capability to maintain consistent data throughout and provide a better user experience, even as error bits increase throughout the product lifecycle of NAND Flash.



SPECIFICATIONS

	SM2259	SM2259XT
Host Interface	SATA 6Gb/s	SATA 6Gb/s
ATA Protocol	ATA-8	ATA-8
NAND Flash Channel	4	4
CE/Channel	8	4
Performance	<ul style="list-style-type: none"> - Sequential Read 560 MB/s - Sequential Write 520 MB/s - Random Read: 100K IOPs - Random Write: 90K IOPs 	<ul style="list-style-type: none"> - Sequential Read 560 MB/s - Sequential Write 520 MB/s - Random Read: 75K IOPs - Random Write: 75K IOPs
DRAM Interface	Supports DDR3/3L/4 and LPDDR3	DRAM-less
NAND Flash Support	Supports ONFI 4.0 and Toggle 2.0 interface	
Security	Real time full drive encryption with AES TCG Opal protocol Hardware SHA 256 and TRNG	--
Temperature Support	c-temp: 0°C to 70°C i-temp: -40°C to 85°C	
Package	336-ball TFBGA	144-ball TFBGA



2.5" PCB with SM2259



M.2 PCB with SM2259XT