



SM2260

PCIe Gen3 x4 NVMe 1.2 SSD Controller

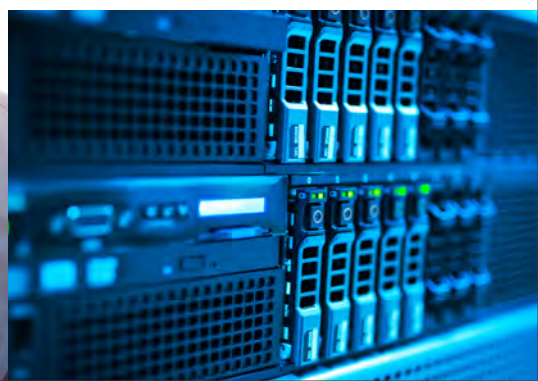
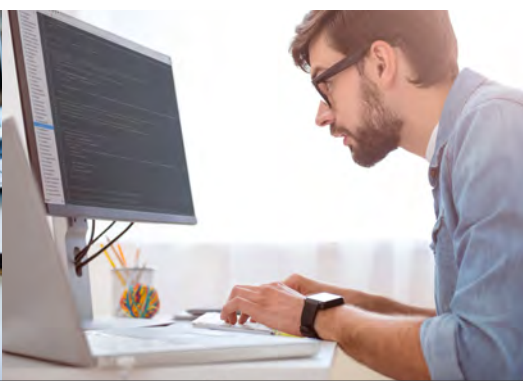
The SM2260 is a high-performance PCIe Gen3 x4 SSD controller ideally suited for client and entry level enterprise SSDs. The SM2260 features four 8 gigabit-per-second (Gbps) lanes (PCIe Gen3 x4) of simultaneous data flow coupled with eight NAND channels supporting up to 2 TB capacity. By optimizing hardware and software to take full advantage of PCIe 3.1 and NVMe 1.2 SSD technology, the SM2260 solution delivers high performance, better reliability, and more cost-effective PCIe SSD solutions using M.2, 2.5" and BGA form factors.

The SM2260 is a complete merchant ASIC/firmware solution supporting 3D MLC and TLC NAND from all major NAND suppliers. Leveraging Silicon Motion's proprietary NANDXtend™ error-correcting code (ECC) technology, the SM2260 provides a comprehensive data protection and enhances the endurance and retention of 3D NAND.

KEY FEATURES

- **High Performance**
 - Sequential Read: 2400 MB/s*
 - Sequential Write: 1000 MB/s*
 - Random Read: 120K IOPS*
 - Random Write: 140K IOPS*
- **Enhanced Security**
 - Real time full drive encryption with AES
 - TCG Opal protocol
 - Hardware SHA 256 and TRNG
- **Comprehensive NAND Flash Support**
 - 3D MLC/TLC from all major NAND suppliers
- **Best-in-class Low Power**
 - PS3: 50mW
 - PS4 (L1.2): <5mW

* with IMFT 3D NAND and 32-bit DRAM interface



FEATURES

• Host Interface

- PCIe Gen 3 x 4 Lane
- Compliant with PCIe Base Specification Revision 3.1
- Compliant with NVMe 1.2 Protocol

• NAND Flash Support

- Up to 8 NAND flash channels
- 4 chip enable pins per channel
- Supports ONFI 4.0 and Toggle 2.0 interface
- Supports SDR, NV-DDR/NV-DDR2/NV-DDR3, and Toggle mode
- Supports NV-DDR2 up to 533MT/s

• DRAM Interface

- Supports external 533MHz DDR3, DDR3L and LPDDR2
- 32-bit/16-bit data bus width
- 2 chip enable pins

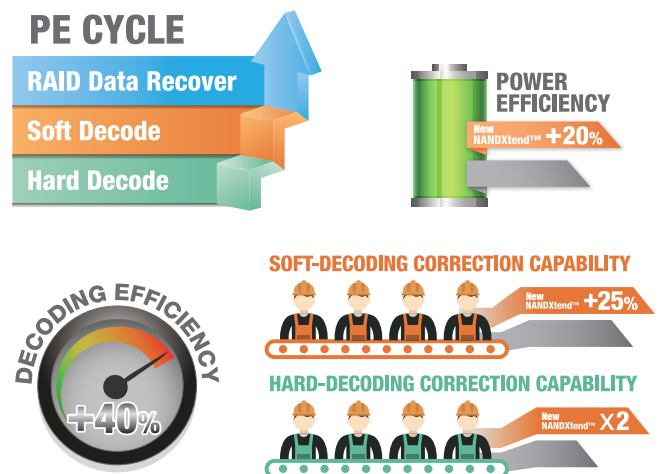
• Dual ARM Cortex CPU

• NANDXtend™ ECC Technology

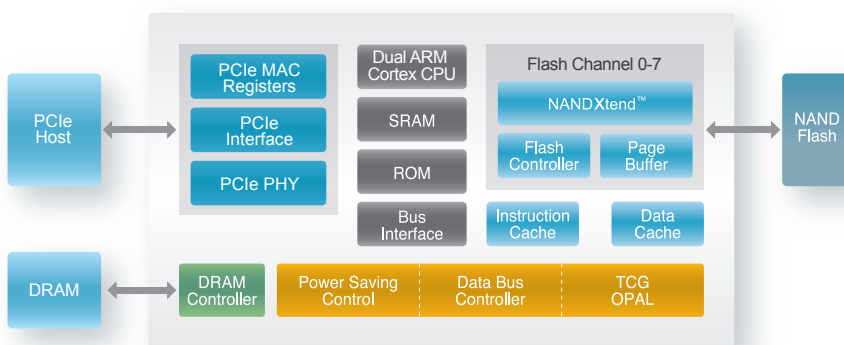
- 2KB codeword LDPC
- Embedded programmable RAID

NANDXtend™ Technology

The SM2260 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.



BLOCK DIAGRAM



SPECIFICATIONS

Host Standard	PCIe Gen3 x4
PCIe Protocol	NVMe 1.2
NAND Flash Channel	8
CE/Channel	4
Commercial Temperature	0°C to 70°C
Industrial Temperature	-40°C to 85°C
Package	472-ball TFBGA (18mm x 16mm)