

# SM2263EN / SM2263XT

High Performance PCIe Gen3 x4  
NVMe 1.3 SSD Controllers

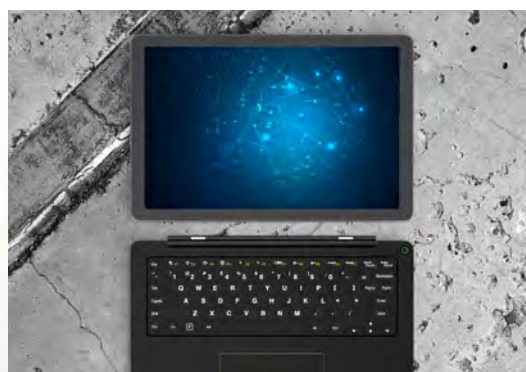


The SM2263EN and SM2263XT are 4-channel high-performance PCIe Gen3 x4 SSD controllers ideally suited for cost-effective, small form factor and low power client SSDs. The SM2263EN features best-in-class performance for mainstream PCI NVMe client SSDs, while the DRAM-less design of SM2263XT reduces BOM cost without compromising performance while enabling 11.5mmx13mm BGA SSDs as well as SSDs supporting the Host Memory Buffer (HMB) architecture. The SM2263EN and SM2263XT feature four 8 gigabit-per-second (Gbps) lanes (PCIe Gen3 x4) of simultaneous data flow coupled with four NAND channels. By optimizing hardware and software to take full advantage of PCIe 3.1 and NVMe 1.3 SSD specifications, the SM2263EN and SM2263XT solutions deliver high performance, better reliability, and more cost-effective PCIe SSD solutions.

The SM2263EN and SM2263XT are complete merchant ASIC/firmware solutions supporting 3D NAND from all major NAND suppliers. Leveraging Silicon Motion's proprietary NANDXtend™ error-correcting code (ECC) technology, the SM2263EN and SM2263XT enhance the endurance and retention of 3D NAND and provides a comprehensive data protection through SRAM ECC and End to End data path protection.

## KEY FEATURES

- **High Performance**
  - PCIe Gen3 x4
  - 4 NAND channels
- **Best-in-class Low Power**
  - PS3: 50mW
  - PS4 (L1.2): <2mW
- **Datapath Protection**
  - End to end data protection
  - SRAM ECC
- **NANDXtend™ ECC Technology**
  - 2KB codeword LDPC
  - Embedded programmable RAID



## SPECIFICATIONS

	SM2263EN	SM2263XT
Host Interface	PCIe Gen3 x4	PCIe Gen3 x4
PCIe Protocol	NVMe 1.3	NVMe 1.3
NAND Flash Channel	4	4
CE/Channel	4	4
Max Performance	Sequential Read: 2,400 MB/s Sequential Write: 1,700 MB/s Random Read: 300K IOPS Random Write: 250K IOPS	Sequential Read: 2,400 MB/s Sequential Write: 1,700 MB/s Random Read: 280K IOPS (HMB) 140K IOPS (no HMB) Random Write: 250K IOPS
DRAM Interface	Supports DDR3, DDR3L, LPDDR3 and DDR4 16-bit data bus width 2 chip enable pins	DRAM-less
NAND Flash Support	ONFI4.0/3.0 and Toggle3.0/2.0 NV-DDR3 up to 667MT/s	
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	288-ball TFBGA (12mm x 12mm)	

## BLOCK DIAGRAM

