SiliconMotion

SM2322

The High-Speed and High-Capacity USB 3.2 Gen2 x2 Portable SSD Controller Solution

The SM2322 is Silicon Motion's new-generation single-chip portable SSD controller, which interfaces directly with the host, eliminating the need for an external bridge chip. This simplification not only reduces design complexity and the Bill of Materials (BOM) cost for manufacturers of external SSDs but also accelerates development timelines and lowers system-level costs, offering significant advantages to customers. The SM2322 is the industry's fastest single-chip high-performance, low-power, and cost-effective solution, supporting up to 8TB of storage and achieving unparalleled data transfer rates of 20Gbps for storing and accessing large amounts of content seamlessly from AI smartphones, high-performance multimedia devices, and game consoles.

Superior Speed with Bigger Capacity

With the increase of AI-capable devices, high-density and high-performance storage solutions are becoming more critical to consumers. The SM2322 is equipped with a USB 3.2 Gen2x 2 interface with 20Gb/s bandwidth and a fully integrated hardware and software solution that provides four NAND channels capable of faster data rates of up to 1,200 MT/s per channel, delivering peak sequential read and write transfer speeds of 2,100MB/s and 2,000MB/s, respectively. With this, it supports the latest TLC/QLC NAND and is ready to adapt to future NAND I/O speed advancements, offering blazing-fast data transfer with up to 8TB high capacity in a compact form factor. It effectively meets the customer’s need for faster data access and larger capacity.

Innovative NANDXtend® 4KB LDPC ECC Engine and High Data Security Designed

Leveraging Silicon Motion’s proprietary NANDXtend® 4KB LDPC error-correction technologies, the SM2322 enhances the endurance and data retention of 3D TLC/QLC NAND. It provides comprehensive assurance of data integrity through SRAM ECC and end-to-end data path protection.

In addition, the SM2322 delivers the highest level of data security by providing AES 256-bit encryption, fingerprint security, and full compliance with the Trusted Computing Group (TCG) Opal specification to meet the AI data storage required high-security standards.

KEY FEATURES

- **Ultra High Performance**
  - Sequential Read: up to 2,100 MB/s
  - Sequential Write: up to 2,000 MB/s
- **Low power consumption**
  - Supports Flash devices operating at 1.2V/ 1.8V
  - U3: 8mW
- **Broad host device compatibility**
  - Compliant with USB 3.2/2.0 and Type-C spec Release 1.3
  - Supports Type-C CC Logic
- **Data Integrity and Security**
  - Supports Fingerprint Security
  - Self-encrypting drive (SED) with AES 128/256 and TCG Opal
  - Data retention extension with NANDXtend®

SPECIFICATIONS

	SM2322
Host Interface	USB 3.2 Gen2 x2
Processor	Dual ARM Cortex R5 CPU
Channel/CE	4CH/32CE
NAND Flash Support	3D TLC/QLC Toggle/ONFI DDR NAND Flash VCCQ 1.8V/1.2V
Max Capacity	8TB
Max Performance	Sequential Read 2,100 MB/s Sequential Write 2,000 MB/s
Security	Real time full drive encryption with AES 128/256 TCG Opal 2.0 compliant Hardware SHA 256 and TRNG Supports Fingerprint Secure
Operating System Support	Windows 10/Windows 8/Windows 7 Mac OS 10.x Linux kernel 2.4
Package	TFBGA (9mm x 9mm) Lead-free and RoHS compliant

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