

SM2250

SATA Solid-State Drive Controller

With the powerful and configurable ECC engine and The SM2250 SATA SSD Controller is designed with outstanding performance and a high level of reliability for a wide range of applications: enterprise server, workstation system, online storage, notebook, and desktop. The SSD functions at much faster transfer speed by saving spin-up and seek time in traditional HDD and enables a shock-protected and quiet-operating environment for mobile storage requirements without any moving mechanical parts.

The SM2250 employs the 8 channel flash interface with advanced TRIM command, low write amplification factor, native command queuing, and global wear leveling to achieve the extremely high input/output per second (IOPS). From the moment of boot-up till the system powers off, Silicon Motion's error correcting coding, bad block management and other proprietary technologies ensure the data correction and security. With all the featured designs in hardware and software, the SM2250 can fulfill a perfect storage system presenting higher performance and shorter response time for enterprise-class applications and high capacity consumer storage.

Applications

- SATA II Solid State Disk
- Embedded Application
- High-Speed NAND Storage

Package

- TFBGA 324-ball, 17x17 mm
- Lead-free and RoHS Compliant

Key Features

- **SATA Interface**
 - Compliant with Serial ATA Revision 2.6 specification
 - 1.5 Gbps/ 3.0 Gbps interface rate
 - Supports Native Command Queuing
 - Supports TRIM command based on ATA-8
 - Supports 48-bit Logical Block Addressing (LBA)
 - Supports partial and slumber mode
- **Flash Interface**
 - Supports ONFI 2.1/2.2 Synchronous/Asynchronous Interface
 - Supports Toggle Synchronous Interface
 - 8 parallel channel flash interface
 - 8 CE pins per channel to support 8/16 flash devices
 - Global Wear Leveling
- **Flash Memory Support**
 - Supports all 2x/3x nm MLC/SLC NAND Flash
 - Supports 2KB, 4KB, and 8KB page size
 - 2-plane Interleave structure
- **Supports External DRAM**
 - DDR/DDR2/Mobile DDR
 - Supports 16-bit data bus width only
 - Supports DRAM with capacity of up to 2Gb
- **Robust Data Protection**
 - Enhanced hardware BCH ECC engine
 - Software/Hardware write protect option
 - StaticDataRefresh technology ensures data integrity
 - Early weak block retirement option
 - Multiple data security zones
- **Controller Core**
 - 32-bit RISC CPU
 - Built-in 1.2V Power-On-Reset
 - Built-in 2.5V and 2.3V voltage detectors for power fail protection
 - Automatic sleep and wake-up mechanism to save power
- **Upgradeable Firmware**
 - Supports firmware in system programming (ISP) function for firmware upgrade
- **Operating Temperature**
 - Commercial version: 0°C ~ 70°C
 - Industrial version: -40°C ~ 85°C

