SM2232

UDMA Compact Flash/ PATA SSD 2-Channel Controller

Overview

The SM2232 incorporates the highest performance and the lowest power consumption Compact Flash/IDE interface in a NAND controller. The SM2232 is CFA 4.1 compliant that supports UDMA transfer on True-IDE and PCMCIA modes.

The SM2232 can detect/correct up to 24-bit errors within 1KB data, and performs global static wear-leveling to evenly distribute program/erase count to each block. With the advanced ECC and global wear-leveling algorithm, the SM2232 can utilize various NAND Flash vendors and geometries to maximize the life expectancy of Compact Flash card and Solid State Drive.

Key Features

- Host Interface Features
  - Compliant with CFA Specification v4.1
  - Supports IDE PIO modes 0~6 and UDMA modes 0~6
  - Supports PCMCIA UDMA modes 0~6
  - Supports SMART command set and ATA security command set

- NAND Flash Interface and Firmware Features
  - Flash interface: 2 channels and 8 chip-enabled pins per channel
  - Supports the advanced 3x/4xnm SLC/MLC NAND Flash
  - Supports two-plane and interleave to optimize performance
  - Hardware BCH ECC corrects up to 13- and 24-bit errors in 1KB data
  - Global wear-leveling to even writes/erases counts in NAND Flash components
  - In-System Programming (ISP) provides flexibility for new Flash and device compatibility support

Applications

- Compact Flash Card
- IDE (PATA) Solid State Disk
- Embedded Application
- High-Speed NAND Storage

Target Performance

- SLC sustained read rate: 55MB/s*
- SLC sustained write rate: 50MB/s*
- MLC sustained read rate: 50MB/s*
- MLC sustained write rate: 35MB/s*

Overall Features

- 128-pin TQFP package
- Operating temperature:
  - Commercial: 0~70°C
  - Extended: -40~85°C
- Power consumption
  - 25mA (active mode)*
  - 50uA (standby mode)*
- Pin compatible with SM223/SM2231

*Figures may vary among platforms.

SM2232 Block Diagram