Silicon Image™
SteelVine

SteelVine® Series 3 Core

Third Generation SATA Port Multiplier Storage Processor

The SteelVine® Series 3 Core Sil3723 is a one-to-two Serial ATA (SATA) Port Multiplier designed to provide a high-performance link between a single SATA host port and two SATA device ports. The Sil3723 supports host and device link rates of 1.5 Gbps or 3 Gbps with auto-negotiation, giving system designers or end users the flexibility to choose 1.5 Gbps or 3 Gbps SATA hard drives.

The SteelVine Series 3 Core SiI3723 Port Multiplier extends the capabilities of SATA host ports, providing an internal or external port (eSATA) for multiple drives to enable a more efficient use of the SATA bus bandwidth.

SiI3723 features two operating modes. In SATA command-based switching mode, SiI3723 operates like a multiplexing switch whereby each drive is visible and the target is addressed using a single hardware queue in the SATA host controller. In FIS-based switching mode, SiI3723 operates like a smart multiplexor. Each drive is visible, and, using multiple ques in an advanced SATA host controller, commands are overlapped to drive the

total bandwidth near the combined speed of both drives. SiI3723 automatically switches between modes based on the SATA host controller abilities. The three ports have LED pins to show activity and link. No external memory components are necessary.

SiI3723 port multiplier supports JBOD mode. SiI3723 reduces your power budget by entering aggressive power down modes when drive(s) are idle or not present.

The strap pins are used to set PHY levels for cable and trace length optimization. There are also optional pins to enhance performance.
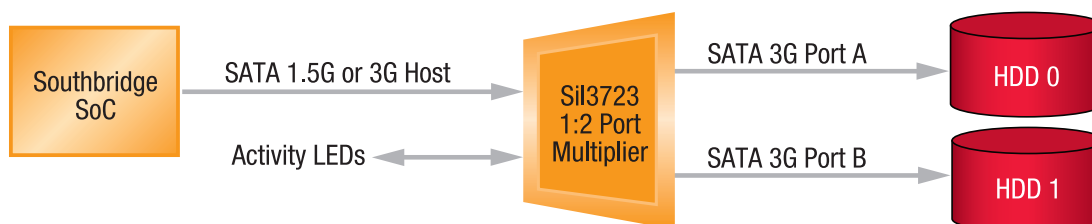
SiI3723

Applications

- **PC Motherboards**
- **DVR Motherboards**
- **CE Motherboards**
- **Storage Enclosures**

Key Features

- **Storage SATA Port Multiplier**
- **eSATA capable device ports**
- **Automatic down shift to Gen 1 as needed**
- **LED pins for each PHY**
- **Enhanced performance option**

SERIAL ATA 3Gb/s

SiI3723 System Diagram

SiI3723 System Diagram: Southbridge SoC — SATA 1.5G or 3G Host → SiI3723 1:2 Port Multiplier; Activity LEDs ↔ SiI3723; SATA 3G Port A → HDD 0; SATA 3G Port B → HDD 1.

FIS-based switching

To use this mode, the host controller must have a multi-level hardware queue and support FIS-based SATA switching. When the host software alternates commands to the drives, the commands are able to overlap using the hardware queue and restructure the data back into meaningful packets. The concurrent access and restructuring enables the combined speed of both drives to use the full bandwidth of the 3Gbps SATA host bus.

Serial ATA Host Interface Features

- SATA 2.6 spec. and UTD 1.3 test compliant
- Serial ATA Gen2m compliance
- eSATA and 2-meter cable support
- 3 Gbps (auto-negotiates to 1.5 Gbps)
- Bypass mode for all commands

Device Interface Features

- SATA 2.6 spec. and UTD 1.3 test compliant
- Serial ATA Gen2m compliance
- eSATA and 2-meter cable support
- 3 Gbps (auto-negotiates to 1.5 Gbps)
- Independent 8 KB FIFO / Port
- Power management capabilities
- Supports hot plug
- Supports ATAPI & asynchronous notification

Electrical Specifications

- 3.3V IO supply, 1.8V core supply
- 0.55 watts (typical)

Environmental

- Operating temperature: 0ºC to 70ºC
- Operating relative humidity: 5% to 80%
- Non-operating relative humidity: 5% to 95%

Physical Specifications
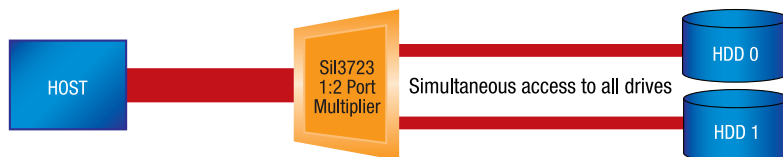
- 40-pin QFN w/Epad (0.5mm pitch)
- 6mm x 6mm

Additional SteelVine features

- Integrated Power on Reset Circuit

Command Based Switching

HOST — SiI3723 1:2 Port Multiplier — Access to one drive at a time — HDD 0 / HDD 1

FIS Based Switching

HOST — SiI3723 1:2 Port Multiplier — Simultaneous access to all drives — HDD 0 / HDD 1

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