SiI 3132
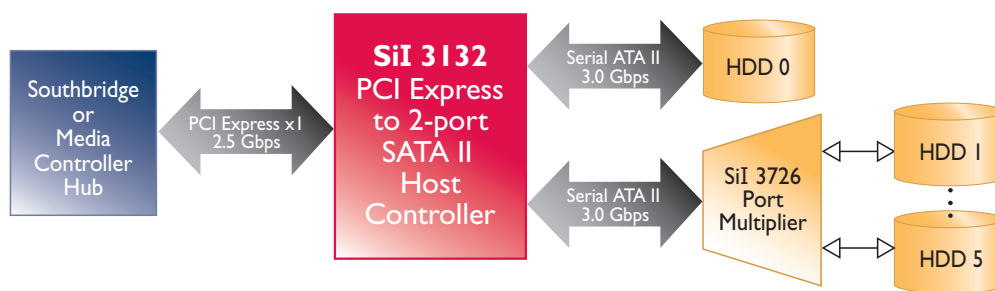# PCI Express to 2-Port Serial ATA II Host Controller

Applications

• PC Motherboards

• ExpressCard Applications

• Server Motherboards

• Embedded Applications

Building on the proven architecture of Silicon Image's industry-leading host controllers, the SiI 3132™ is a single-chip, one-lane PCI Express to 2-port Serial ATA (SATA) II host controller that brings server-class features to the desktop. The x1 PCI Express interface allows the device to connect to the latest motherboards that take advantage of this high-speed serial interface. The SiI 3132 also supports all Serial ATA II features, including 3.0 Gbps SATA II transfer speeds, Native Command Queuing, port multipliers with FIS-based switching, programmable output signal swing strengths for longer external cables or extended backplanes, hot plugging, enclosure management and ATAPI device support.

Users of the SiI 3124 can easily migrate to the SiI 3132 because its driver structure is similar to that of the SiI 3124. The SiI 3132 offers the best SATA price/performance and is both flexible and robust for today's demanding storage applications. When connectivity to more than two devices is required, a port multiplier device such as the SiI 3726 can be used with the SiI 3132.

With the SiI 3132, Silicon Image provides customers with drivers for the Windows and Linux operating systems for both RAID and non-RAID operations. Software RAID 0 (striping) and RAID 1 (mirroring) functions are supported through Silicon Image's SATARaid™ RAID management software utility when each port is connected to a single hard drive. When used with a SATA port multiplier, Software RAID 0, RAID 1, RAID 10 (mirrored stripe) and RAID 5 (parity RAID) are supported.

The SiI 3132 leverages much of the circuit innovation at the physical layer of Silicon Image's proprietary reduced overhead Multi-layer Serial Link (MSL™) architecture, pioneered and proven through its PanelLink® products and extended to the SATALink and Fibre Channel SerDes storage products. MSL technology is a multi-layer approach to providing cost-effective, multi-gigabit semiconductor solutions on a single chip for high-bandwidth applications.

A L L   D I G I T A L   —   N O   L I M I T S

SATALink™

SATALink™

SiI 3132 Features
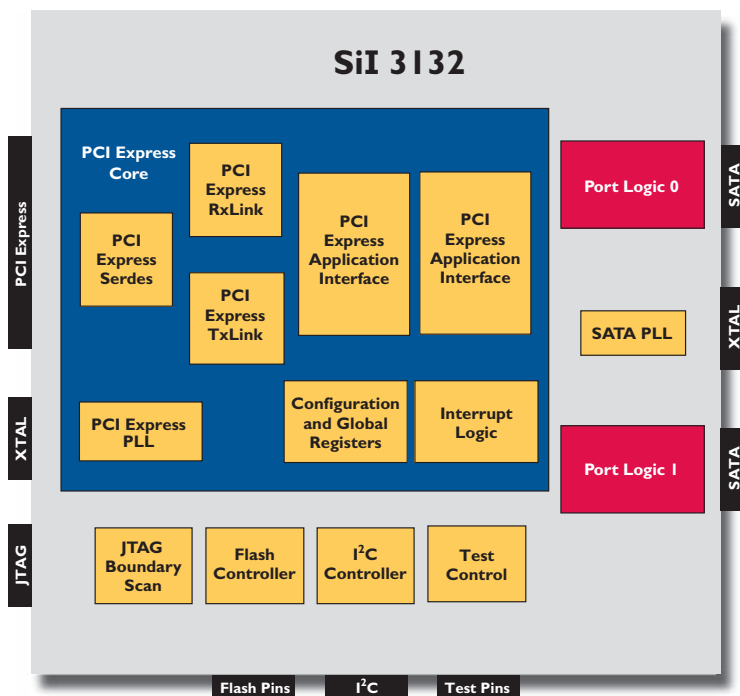## SATALink™ PCI Express to 2-Port Serial ATA II Host Controller

PCI Express Features
- Supports one-lane, 2.5 Gbps PCI Express
- Compliant with PCI Express 1.0a specification
- Supports hot plug for ExpressCard applications
- All registers appear in unified memory space
- All registers accessible through I/O space
- Full-chip command-completion status accessible with single PCI Express access

Serial ATA Features
- Integrated Serial ATA Transport, Link and PHY logic
- Compliant with Serial ATA 1.0a specification with support for full complement of SATA II optional features
- Supports 2nd-generation Serial ATA II transfer rate of 3.0 Gbps
- Plesiochronous, single PLL architecture, with one PLL for two ports
- Signal output amplitude control for external SATA
- Supports two independent Serial ATA channels
  - Independent Link, Transport and data FIFO
  - Independent command fetch, scatter/ gather and command execution
    * Hard-coded state machines for stream-lined command execution
  - Supports Native Command Queuing and Tagged Command Queuing
  - Supports first-party DMA
  - Supports port multipliers with FIS-based switching under hardware control
- 31 commands and scatter/gather tables per port on-chip
- Protocol override per command

- Staggered spin-up control
- Spread spectrum support

General Features
- Host Protocol
  - Optimized for transaction-oriented designs; minimal host overhead
  - Supports two command-issuance mechanisms
    * Efficient in both embedded and PC implementations
    * Reduces dependency on bridge behavior
- Supports up to 4Mb external Flash for BIOS expansion
- Supports connection to a SATA II-compliant Storage Enclosure Processor (SEP) via on-chip I²C interface
- Supports external Flash or serial EEPROM for programmable subsystem vendor ID/subsystem product ID
- JTAG boundary scan

Power
- 1.8V core and 3.3V I/Os

Package
- 88-pin QFN (Quad Flat No-lead)
- 10x10 mm (0.4mm lead pitch)

Silicon Image's SiI 3132 Evaluation Board
The PB 3132 Evaluation Board is a reference board that allows OEMs and system integrators to quickly bridge from PCI Express to Serial ATA and evaluate the performance of the SiI 3132.

Hardware
- SiI 3132 reference design board (PB 3132)

Documentation Available Upon Request
- Base Operating System Drivers: 2000 and XP
- SiI 3132 Reference Board Schematics
- SiI 3132 Data Sheet
- Serial ATA PCB Design Guide

Part Number - SiI3132CNU