



# SteelVine™ Host Controller

## PCI Express to Serial ATA Gen II Host Controller

Built on the proven architecture of Silicon Image's industry-leading host controllers, the SiI3531 is a single-lane PCI Express to single-port Serial ATA (SATA) II host controller that offers best in class SATA price/performance and is both flexible and robust enough for today's demanding storage applications.

The x1 PCI Express interface integrates with the latest motherboard architectures and provides a cost effective way for manufacturers to differentiate their motherboards with an eSATA port. The SiI3531 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. The SiI3531 supports soft RAID 0, 1, 5 and 10 when connected to port multiplier such as the SiI3726.

Users familiar with the SiI3124 or SiI3132 will recognize the SiI3531 common driver structure.

End-users will appreciate the SiI3531 Windows and Linux drivers for both RAID and non-RAID operations.

The SiI3531 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 multilayer approach to providing cost-effective, multi-gigabit semiconductor solutions on a single chip for high-bandwidth applications.

# SiI3531

## Applications

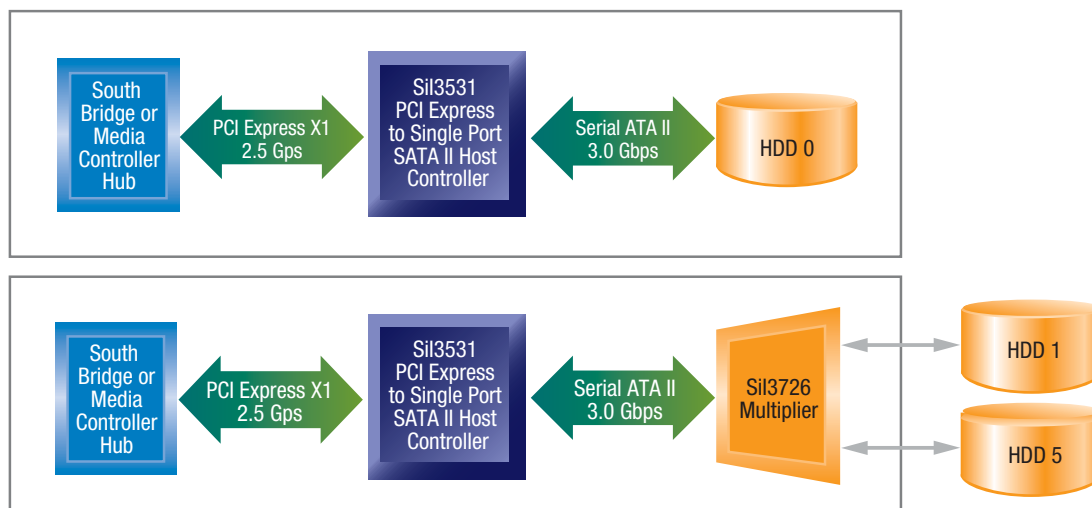
- PC Motherboards
- ExpressCard Applications
- Server Motherboards
- Embedded Applications

## Key Features

- Latest Generation SATA II (3 Gb/s)
- Small 48-pin QFN package
- Port Multiplier Support with FIS based switching
- Software RAID 0, 1, 5, 10 support



### SiI3531 System Diagrams



# Sil3531 Features

## Evaluation Board

The PB3531-1ESATA300 Evaluation Board is a reference board that allows OEMs and system integrators to quickly bridge from PCI Express to external Serial ATA and evaluate the performance of the Sil 3531. Contents include:

### Hardware

- Sil3531 reference design board

### Documentation

- Base Operating System Drivers: 2000/XP, Linux
- Sil 3531 Reference Board Schematics
- Sil 3531 Data Sheet
- Serial ATA PCB Design Guide

## 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 SATA II optional features
- Supports 2nd-generation Serial ATA II transfer rate of 3.0 Gbps
- Plesiochronous, single PLL architecture, with one PLL
- Signal output amplitude control for external SATA
- 31 commands and scatter/gather tables
- Protocol override per command
- Independent link, transport and data FIFO

- Independent command fetch, scatter/gather and command execution
  - Hard-coded state machines for streamlined command execution
  - Supports native command queuing and tagged command queuing
  - Supports first-party DMA
  - Supports port multipliers with FIS-based switching under hardware control
- Spread spectrum support

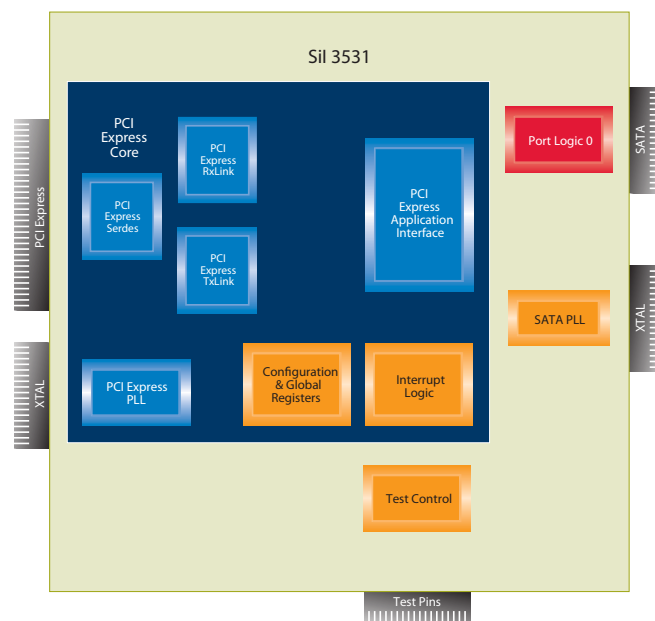
## General Features

- 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

## Power

- 1.8V PHY/ core and 3.3V I/Os Package
- 48-pin QFN with EPAD
- 7x7 mm (0.4mm lead pitch)

## Sil3531 Block Diagram



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