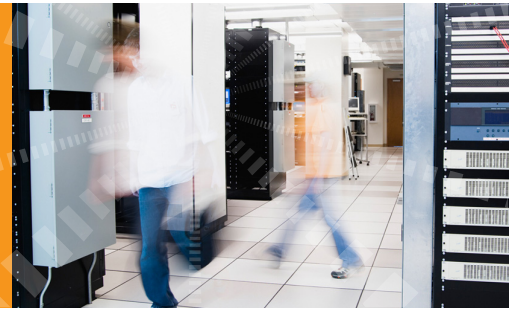


# LSISASx12A

## 12-Port 3Gb/s SAS Expander



### Features

- 12 fully-independent SAS and SATA ports
- SSP, SMP, STP and SATA
- Protocol support
  - SSP Target and Initiator
  - SMP Target
  - STP Target and Initiator
- Supports 1.5 and 3 Gb/s SAS and SATA data transfer rates
- Port independent auto-negotiation
- Ports are non-denominational
  - Initiator or target connect
- Provides a low latency connection router with crossbar module to efficiently create and maintain connections
- Direct, Subtractive decode, and table routing methodologies supported
- Provides a scalable interface that supports up to 144 SAS addresses
- Supports wide and narrow port configurations
  - Allows reuse of routing table resources across all of the PHYs composing a wide port
  - Allows any number of PHYs for wide port support

LSI's Serial Attached SCSI Expander is Ideal for Servers and Storage Systems in Storage Environments Requiring High-Performance, Scalability, and Flexibility in Design.

### Overview

The LSISASx12A is a 12-port 3Gb/s Serial Attached SCSI (SAS) expander that supports 1.5 and 3Gb/s SAS and SATA data transfer rates per port and provides additional data modulation for blink rates and blink patterns. The LSISASx12A is pin compatible and has the same programming model for an external SEP as the LSISASx12 for seamless customer migration. The LSISASx12A 12-port expander provides storage environments with the functionality of connecting multiple targets and initiators through a switched device. This is ideal for today's data centers and storage subsystems, leveraging existing SCSI infrastructure for investment protection and ease of migration and implementation.

The LSISASx12A expander is compliant with the ANSI Serial Attached SCSI specification and supports SATA as defined in the Serial ATA: High Speed Serialized AT Attachment and the Serial ATA II: Port Selector Specification. SAS benefits include improved performance, simplified cabling, smaller connectors, a lower pin count, and lower power requirements. In addition, SAS leverages an electrical and physical connection interface that is compatible with SATA technology. The interface compatibility allows for customer flexibility in drive connection including the 2.5" hard disk drive small form factor.

The LSISASx12A offers high performance, high disk drive connectivity, scalability, and flexibility in various storage environments as an alternative to today's expensive and complex offerings. The LSISASx12A SAS expander is ideal for high availability and scalable server clustering environments and front-end storage subsystems used in clusters, SAN and NAS environments.

A software development kit is available and contains an example Programmable System-on-a-Chip (PSoC) project that demonstrates how to interface to an external SEP. The same programming model for an external SEP is implemented across the LSI expander product line for ease of migration.

**Features (Continued)**

- SATA/SAS HDD spin-up sequencing, configurable on a per-PHY basis
- SGPIO (SFF8485) support provides additional data modulation for blink rates and blink patterns
- 4 GPIO pins
- LEDs per PHY
  - Link status, drive activity, fault LED outputs, cable detect input
  - Can be used as GPIOs
- External interface support
  - EEPROM interface for non-volatile storage of hardware configuration
  - I<sup>2</sup>C interface for device configuration and communication with external enclosure processors
  - UART support for serial debugging
  - Supports JTAG testing
- Diagnostic capability
  - Manufacturing utilities
  - Integration utilities
- Individual PHY power management
- 472 EPBGA package, 27 x 27 mm, 0.13µm Gfx process technology
- Software development kit

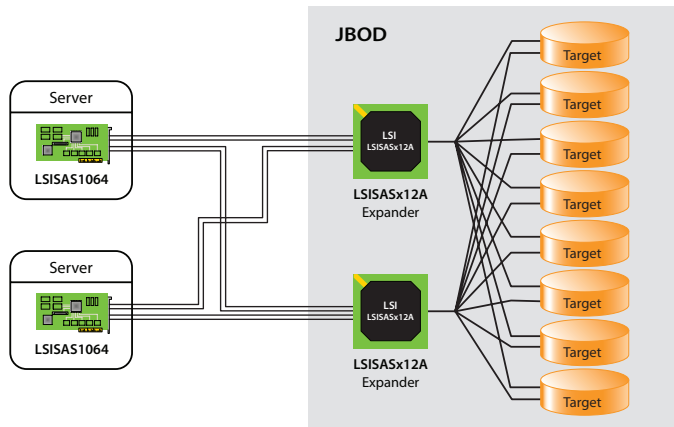


Figure 1. SAS Topology Offers Flexible Link Configuration and Redundancy

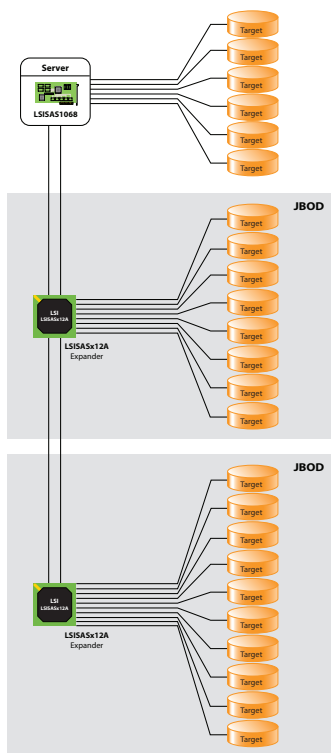


Figure 2. SAS Topology Offers Scalability and High Disk Drive Connectivity



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