



APPLICATIONS

- Enables usage of SATA disks in Enterprise SAS storage systems
- External storage enclosures and RAID subsystems for 2.5" disk drives

FEATURES

- Full SAS-to-SATA drive bridge using SSP protocol
- AAMUX architecture with Active-Active route-aware SAS switching between both host ports
- Multi initiator access
- Active-Active Multiplexing provides true dual-ported functionality for single-ported SATA drives
- Two fully independent 6, 3, and 1.5Gb/s SAS ports with speed negotiation and signal retiming/reconditioning
- One 6, 3, and 1.5Gb/s SATA port with speed negotiation and signal retiming/reconditioning
- Compliant with SAS-2, SATA 2.6, and SAT-2 industry specifications
- Supports T10 Protection Information Model (DIF)
- In-band configuration and control with finely adjustable PHY signal tuning
- 6Gb/s Store and Forward architecture eliminates SATA delays on SAS links
- Supports external flash memory
- Extensive configurable diagnostics counters per port
- Inter-host mailbox feature, enhanced LED drivers, GPIO, and World-Wide Port Name support
- 8 GPIO pins
- Supports NCQ and staggered SATA drive spin-up
- Compliant with SAS STP interface protocol and SFX Gen-I and Gen-II
- 8mm x 9mm BGA package with 0.65mm pitch

LSISS2520 IC for 2.5" Disk Drives

SAS-to-SATA Drive Bridge

LSI offers the broadest SAS product portfolio in the industry with true end-to-end solutions - controllers, expanders, active-active multiplexers, ROCs, host bus adapters, RAID solutions, and external storage. LSI's proven SAS core has completed extensive stress and interoperability testing resulting in the industry's most robust, interoperable solution.

Overview

Leveraging AAMUX® technology, the LSISS2520 controller is a 5th-generation active-active multiplexer which integrates a SAS-SATA drive bridge enabling customers to build economical enterprise storage systems that can accommodate low-cost, high-capacity Serial ATA (SATA) hard drives without sacrificing reliability, manageability, or data availability. In response to enterprise IT initiatives such as Information Life-cycle Management (ILM), infrastructure ROI, and regulatory compliance, storage system vendors must address the increasing pressure to deliver more storage capacity for less money. LSI AAMUX technology makes this possible by enhancing SATA drives with essential enterprise-class features on par with either Serial Attached SCSI (SAS) or Fibre Channel (FC) disk drives.

LSI's AAMUX technology enables single-ported SATA drives to connect like native dual-ported drives for use in enterprise storage systems using SAS expanders. The LSISS2520 controller device brings true active-active multiplexing to the SATA drive, with both

ports simultaneously available, much like dual-ported FC or SAS drives. A dual-ported active-active SATA drive solution results in much higher performance and reduced system development costs when compared to the previous active-passive approach. Because software failover is no longer required, this approach greatly simplifies system software complexity and manageability.

SATA protocol is very limited in drive manageability features compared to SAS and FC. The LSISS2520 controller supports full SAS SSP protocol to the host, thereby removing SATA commands and signaling from the SAS domain. This eliminates the SATA affiliation issues associated with the multi-initiator configurations that are critical to enterprise deployments. The LSISS2520 controller also brings a number of new management features to SATA drives to further enhance their operation in SAS systems. These features include drive power control, PHY control, and extensive diagnostics. These management features can be accessed in-band, eliminating any complex I²C routing and programming.

Performance

The LSISS2520 controller AAMUX architecture employs a highly efficient I/O data flow architecture to enhance total system performance. A patent-pending buffer management scheme allows continuous low-latency data flow between the two upstream SAS host ports and the single-ported SATA drive. The LSISS2520 controller includes support for auto speed negotiation (6, 3, and 1.5Gb/s SAS/SATA I/O) and Native Command Queuing (NCQ), and is completely backward compatible with first-generation SATA I/O and 3Gb/s SAS. The patent-pending active-active command-layer switching architecture frees up bandwidth that is wasted with active-passive port selectors, thus resulting in superior performance.

Flexible Architecture

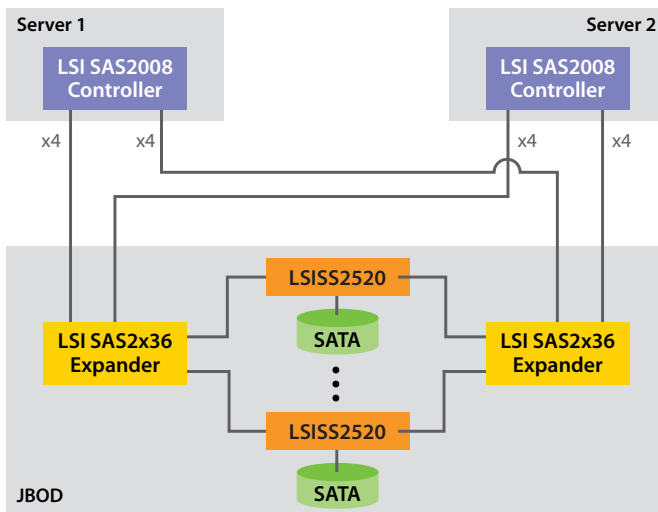
The LSISS2520 controller offers a flexible architecture that is targeted to a variety of storage applications in JBODs, RAID arrays, and backplane-based servers. Fully integrated 6/3/1.5Gb/s SERDES technology and an integrated voltage regulator reduce external active components and cost of implementation. The active-active intelligent switching allows higher-level system software architecture, implementation, and qualification to be greatly simplified – a significant benefit to system designers.

The LSISS2520 controller supports SATA disk drives independent of speed and capacity and is universally compatible with 3rd-party SAS controllers and expanders.

Documentation and Support

LSI offers complete design collateral for the integration of the AAMUX technology, tailored to the needs of OEM customers.

Please contact your LSI Sales representative for further information.



LSISS2520 controller provides SAS drive emulation using SATA drives

For more information and sales office locations, please visit the LSI web sites at: lsi.com lsi.com/contacts
Phone: 1.866.574.5741 or 1.610.712.4323

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