

# LSISAS2108

## PCI Express to 8-Port 6Gb/s SAS/SATA ROC



### Extending Its RAID And SAS Technology Leadership, LSI Introduces Its Fourth Generation RAID-On-a-Chip (ROC)

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.

#### APPLICATIONS

- Direct attached ROC solution for entry to mid-range servers
- Low-cost SAS RAID host bus adapter

#### FEATURES

- High Performance IOP
  - PowerPC 440 @ 533/667/800MHz
  - 32KB L1 I/D caches
- Achieves over 400,000 IOPS
- Exclusive-OR hardware engine for RAID 5
- RAID 6 hardware acceleration
- RAID Features
  - Integrated RAID
    - RAID levels 0, 1, 1E and 10
  - MegaRAID® support with activation key
    - RAID levels 0, 1, 5, 6, 10, 50 and 60
  - Up to 240 disk support
- 6Gb/s SAS Interface
  - 8 port SAS/SATA ROC controller
  - Supports 1.5Gb/s, 3Gb/s, and 6Gb/s SAS and SATA data transfer rates
  - Spread spectrum clocking
  - Supports SSP, SMP, STP and SATA protocols
  - SAS and SATA device support
  - Supports narrow and wide ports
  - T-10 data protection model

#### Overview

The LSISAS2108 is LSI's second generation Serial Attached SCSI (SAS) RAID-On-a-Chip (ROC) device based on four generations of ROC technology and the industry-leading Fusion-MPT™ (Message Passing Technology) architecture. The LSISAS2108 integrates the latest enhancements in SAS and PCI Express technology.

The LSISAS2108 supports 8 PCIe lanes and complies with the PCI Express 2.0 specification that extends the PCIe data rates up to 5.0 GT/s per lane, and is backwards compatible to the 2.5 GT/s data rate supported by PCIe 1.x. It also incorporates enhancements such as End-to-End CRC (ECRC) with Advanced Error Reporting (AER) and the latest advancements in lane and polarity reversal, power management, hot plug support, and MSI/MSI-X and legacy interrupt generation.

The eight-port ROC device provides SAS and SATA data transfer rates of 1.5, 3, and 6Gb/s per lane and automatically negotiates between the speeds. Enhanced features are supported such as T-10 Data Protection Model for early detection of and recovery from data, Spread Spectrum-Clocking (SSC) for EMI reduction, and data

encryption for the protection of confidential data. The LSISAS2108 is available with encryption and without encryption.

The LSISAS2108 ROC integrates a 72-bit, 800MHz, ECC protected DDR2 SDRAM interface, hardware acceleration engines for RAID 5 and RAID 6 parity calculations, and the high performance PowerPC 440 RISC processor that achieves 1600 Dhrystone MIPS (DMIPS) resulting in a cost-effective ROC ideal for entry and mid-range servers.

LSI offers a complete selection of internal RAID product offerings for direct attached storage (DAS) connectivity and RAID-on-Motherboard (ROMB) solutions. Integrated RAID (R0, 1, 1E, 10) is a low cost, high performance RAID solution designed for system environments requiring redundancy and high availability where a full featured RAID implementation is cost prohibitive or not required. For applications that require a full featured RAID implementation, MegaRAID hardware RAID (0, 1, 5, 6, 10, 50, 60) is ideal for high performance and high availability applications. In addition to offering a complete suite of RAID offerings, LSI also offers upgrade paths from our low cost RAID solutions to our full featured RAID enabled with an activation key.

For ease of use, the LSI RAID products are managed under a common management utility, MegaRAID Storage Manager (MSM™).

LSI provides a complete suite of industry standard operating system drivers.

### Fusion-MPT Architecture

Fusion-MPT™ architecture marks the next generation of I/O architecture designed to

deliver the highest performance available today while reducing time to market, integration, and certification time. Fusion-MPT devices are high performance, cost-effective protocol controllers that represent the newest system-level integration technology in intelligent I/O processors from LSI.

**Please contact your LSI Sales Rep for ordering information.**

Figure 1: LSISAS2108 Block Diagram

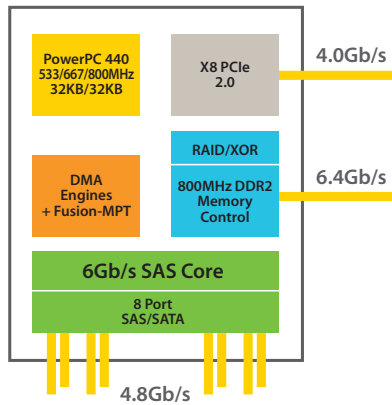
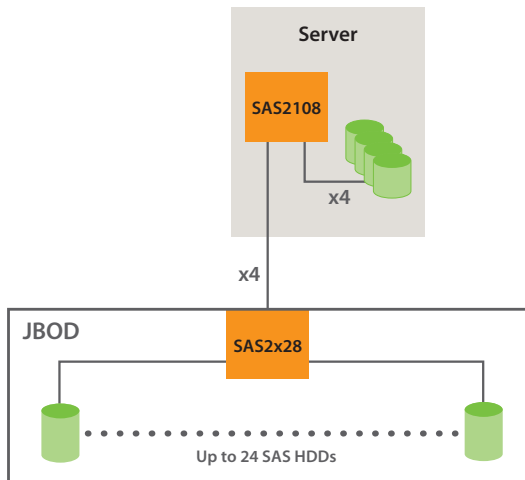


Figure 2: LSISAS2108 Topology Diagram



### FEATURES (Continued)

- PCI Express 2.0 Interface
  - Supports x8, x4, x1 PCIe lanes at a transfer rate up to 5.0 GT/s per lane, full duplex
  - Lane and polarity reversal
  - Supports End to End CRC (ECRC) and Advanced Error Reporting (AER)
  - PCI Express hot plug support
- Power Management support
  - Slumber and Partial power mode support for SATA devices
  - Programmable SAS link power down
- External memory interface support
  - 72-bit DDR2 SDRAM with ECC
  - Flash ROM
  - NVSRAM/SRAM
- Communication Interfaces
  - I<sup>2</sup>C interface for enclosure management services
  - UART interface
- Security Features
  - Full Disk Encryption Support (FDE)
  - Advanced Encryption Standard support
- SFF-8485 Compliant, SGPIO
- JTAG support
- 672-pin FPBGA, 27 x 27mm

For more information and sales office locations, please visit the LSI web sites at: [lsi.com](http://lsi.com) [lsi.com/contacts](http://lsi.com/contacts)

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