LSI
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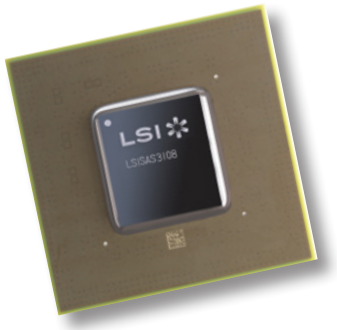
Product Brief

LSI SAS 3108

PCI Express® to 8-Port 12Gb/s SAS/SATA ROC



LSI SAS 3108

Applications

- Direct Attached SAS+SATA controller solutions for entry to mid-range servers
- SAS RAID host bus adapter
- Cost effective, single chip solution for entry-level RAID storage systems
- Storage Processor for external storage applications (LSI SAS 3108SP)

Features

- High Performance IOP
  - Dual PowerPC 476 @ 1.2GHz
  - (2) 32KB L1 I/D caches
  - (2) 512KB L2 caches
    - 2MB shared L3 cache
- Exclusive-OR hardware engine for RAID 5
- RAID 6 hardware acceleration
- RAID Features
  - MegaRAID® support with activation key
    - RAID levels 0, 1, 5, 6, 10, 50 and 60
  - Integrated RAID
    - RAID levels 0, 1, 1E and 10
- DRAM back-up at power fail using ONFI (Open NAND Flash Interface)
- 12Gb/s SAS Interface
  - 8 port SAS+SATA controller
  - Supports 12, 6, and 3Gb/s SAS and 6, 3Gb/s SATA data transfer rates
  - Spread spectrum clocking
  - Supports SSP, SMP, STP and SATA protocols
  - SAS+SATA device support

Extending Its RAID and SAS Technology Leadership, LSI Introduces 12Gb/s SAS/SATA RAID-On-a-Chip (ROC)

LSI is a storage market leader in SAS, Enterprise RAID, and Application Acceleration, enabling the entire storage ecosystem. LSI offers the broadest SAS product portfolio in the industry including SAS ROCs, IO controllers, expanders, host bus adapters, RAID controller cards, switches, advanced software options, and application acceleration solutions. LSI solutions can provide the performance, connectivity, scalability, and manageability required for today's enterprise storage environments. LSI's proven SAS core has completed extensive stress and interoperability testing resulting in the industry's most robust, interoperable solution.

Overview

The LSI® SAS 3108 is LSI's fourth generation Serial Attached SCSI (SAS) RAID-On-a-Chip (ROC) device based on ROC technology and the industry-leading Fusion-MPT™ (Message Passing Technology) architecture. The LSISAS3108 integrates the latest enhancements in SAS and PCI Express technology.

The LSI SAS 3108 supports 8 PCIe® lanes and complies with the PCI Express 3.0 specification that extends the PCIe data rates up to 8.0 GT/s per lane, and is backwards compatible to the 5.0/2.5 GT/s data rate supported by PCIe 2.x., 1.x. It also incorporates enhancements such as Single Root I/O Virtualization (SR-IOV) with 16 virtual functions, 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 data transfer rates of 12, 6, and 3Gb/s per lane, and SATA at 6 and 3Gb/s data transfer rates per lane. The device automatically negotiates between the speeds. Enhanced features are supported such as T-10 Data Protection Model for early detection of and recovery from data corruption, Spread Spectrum-Clocking (SSC) for EMI reduction, and data encryption for the protection of confidential data. Additional features include LSI DataBolt™ Technology allowing users to take advantage of 12Gb/s speeds while utilizing existing 6Gb/s drives and backplanes. The LSISAS3108 is available with encryption and without encryption.

The LSI SAS 3108 ROC integrates a 72-bit, DDR3-1866 SDRAM interface, hardware acceleration engines for RAID 5 and RAID 6 parity calculations, and the high performance dual core, PowerPC 476 RISC processor that achieves 2400 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 (0, 1, 1E, 10)

- Supports narrow and wide ports
- T-10 data protection
- T-10 Optical Support
- DataBolt Technology

- PCI Express 3.0 Interface
  - Supports x8, x4, x2, x1 PCIe lanes at a transfer rate up to 8.0 GT/s per lane, full duplex
  - Lane and polarity reversal
  - SR-IOV (16 virtual functions)
  - Supports End-to-End CRC (ECRC) and Advanced Error Reporting (AER)
  - PCI Express hot plug support (LSISAS3108SP)
- Advanced Power Management support
  - Variable PCIe bandwidth negotiation
- External memory interface support
  - 40/72-bit, DDR3-1866
  - Flash ROM
  - NVSRAM/SRAM
- Communication Interfaces
  - I2C interfaces for enclosure management services
  - UART and Ethernet interfaces
- SFF-8485 Compliant, SGPIO
- JTAG support
- 1152 HP FPBGA (29mm)

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 Overview

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.

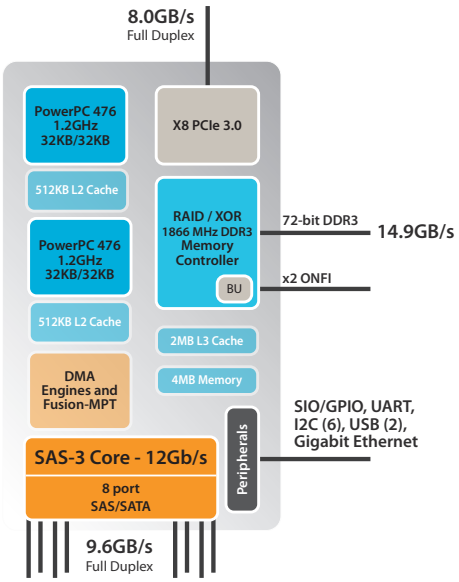


Figure 1: LSISAS3108 Block Diagram

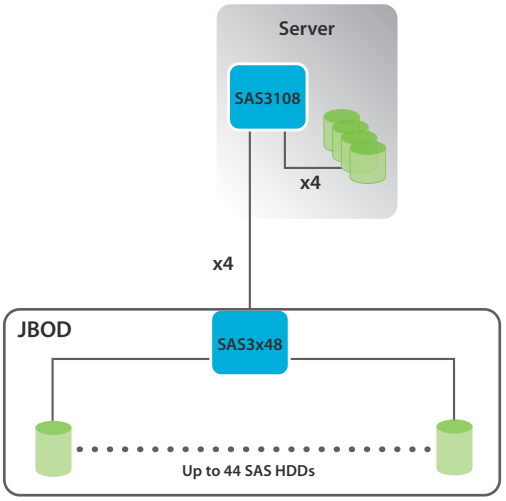


Figure 2: LSISAS3108 Topology Diagram

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