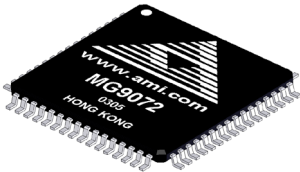


MegaRAC® MG9072

SAS/SATA Enclosure Management Controller



AMI's MG9072 Enclosure Management controller provides exceptional flexibility: it can be utilized with both SATA or SAS backplanes for applications from entry-level to mission-critical, while providing a cost effective solution that does not require an extender. The chip implements the most widely used management protocols in the field: SES-2 protocol over I2C and Serial GPIO for SAS and SATA HBAs, supporting LED for up to eight drives, temperature sensor and fan management.

AMI works with a broad variety of HBA vendors to ensure compatibility.

Data Sheet

04 30 2008

HIGHLIGHTS

- > Provides drive Activity, Fail, Hot-spare and Locate indication for each drive slot
- > SGPIO or I2C interface to communicate to SAS/SATA HBA
- > Support for SGPIO (SFF8485) or SES-2 protocol over I2C
- > Support for two SFF-8448 Rev0.5 interface
- > Supports up to 8 SAS/SATA drives
- > Supports one 2 wire Temperature sensor
- > Provides Buzzer Control output
- > Supports Fan Fail & Fan Presence input for up to 3 Fans
- > Tested with numerous platforms
 - SGPIO Platforms:
 - Adaptec
 - LSI
 - Intel ESB2
 - NVIDIA
 - SES Platforms:
 - Adaptec
 - AMCC

Business-critical and telecom applications demand high-availability, which means systems must be operational 99.999% of the time. This implies that the system must be monitored to identify potential failures before they happen and actively prevent them.

Proper environmental management is needed in order to identify potential problems before they cause failures and help pinpoint their locations. Enclosure management requires continuous monitoring of various sensors that detect variations in voltages, temperatures, humidity, fans and the like.

When enclosure monitoring tasks are off-loaded to a lower-cost chip on the backplane, the server main processor is free of ancillary tasks and its usage is focused on mission-critical operations. In other words, efficient enclosure management is key to optimum system performance.

The MG9072 chip manages hot-swap SAS/SATA-II backplanes with enclosure management, ideal for cost-sensitive and performance-oriented system designs. The device is designed to work with any SAS/SATA HBA that supports SES-2 protocol over I2C. Alternatively, each MG 9072 has one SGPIO port that can communicate enclosure management information to the SAS host bus adapter, support LED management and detect drive presence for up to 8 drives.

Serial Attached SCSI (SAS) and Serial ATA are the latest storage interconnect

standards, introducing higher speeds, more robust data integrity, smaller designs and wider standardization. The SAS interface is compatible with lower-cost-per-gigabyte SATA drives, giving system builders the flexibility to integrate either SAS or SATA devices while slashing the costs associated with supporting two separate interfaces. As the next generation of SCSI, SAS bridges the parallel technology gap in performance, scalability and affordability.

The physical layer of the SAS interface is designed to be compatible with the physical layer of Serial ATA (SATA) interface. This facilitates the SAS and SATA drives to be plugged into a SAS backplane, which reduces design and inventory costs for backplane manufacturers.

MG9072 can sync with the backplane to support either SES-2 interface or SGPIO according to SFF8485 rev. 0.6.

The sideband signals defined in SAS/SATA standard can be used to carry SGPIO or 2wire signals depending on Backplane ID and Controller ID. The Controller ID is used by the Backplane to select the interface. The Backplane ID is used by the controller to select the interface.

A backplane required to support only 8 drives can have just one MG7072. By adding more devices, the backplane can manage 16, 32 drives or more.



MegaRAC® MG9072

SAS/SATA Enclosure Management Controller

Features

Features

Supported Enclosure Management Protocol

SCSI Enclosure Services-2 (SES-2) Rev.10, 29 Jan 2004

SFF-8485 Specification for Serial GPIO (SGPIO)

Bus Revision 0.6, 10 Oct. 2005

SGPIO

Two SGPIO ports communicate enclosure management information, LED management and drive presence for up to 8 drives.

SF8448 interface signal for SAS

I2C reset from HBA / Serial data output bit stream from initiator

Serial data input bit stream to initiator

I2C Serial clock/clock signal from initiator

I2C Serial Data / Last clock of a bit stream from initiator

Controller type

Managed Elements

Drive presence

2 LEDs for each slot

3 FANs

1 Buzzer

1 Temperature sensor

Supported Indications

Activity

Fail

Rebuild

Locate

Absolute Maximum Ratings

Operating Temperatures -55oC to +125oC

Storage Temperature -65oC to +150oC

Voltage on any pin except RESET# with respect to ground -1.0V to VCC+0.5V

Voltage on RESET# with respect to ground -1.0 to +13.0V

Maximum operating Voltage 6.00V

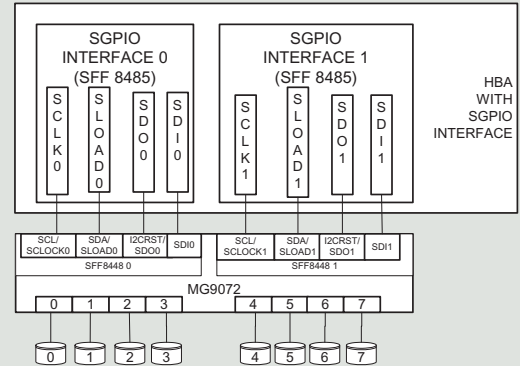
DC Current per I/O Pin 40.0mA

DC Current VCC and Ground Pin 200.0mA

VERSATILE: MG 9072 CAN BE USED IN A VARIETY OF DESIGNS

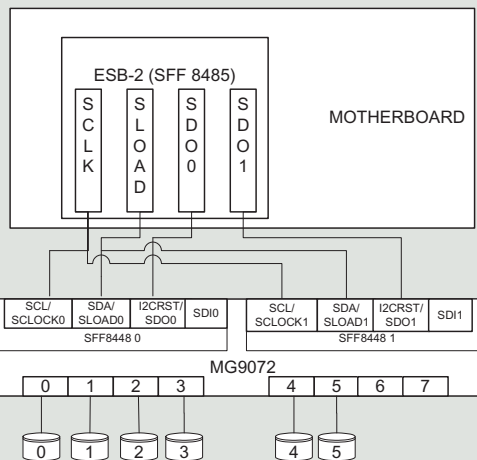
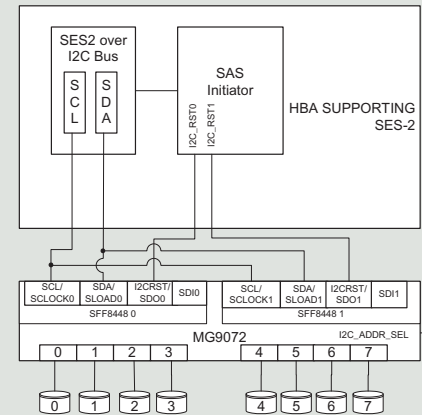
HBA /SGPIO INTERFACE

Each device has two SGPIO ports that can communicate enclosure management information to HBAs with SGPIO interface, supporting LED management and drive presence for up to 8 drives. By adding more MG9072 devices, the backplane can be realized for 12, 16 drives or more.



HBA /SES-2 INTERFACE

MG9072 is designed to work with any SAS/SATA HBA that support SES-2 protocol over I2C. By adding more MG9072 devices, the backplane can be realized for 16, 32 drives or more.



ESB2

The block diagram shows the use of MG9072 with an ESB-2 south-bridge. By adding more MG9072 devices, the backplane can be realized for 16, 32 drives or more.



American Megatrends Inc.

5555 Oakbrook Parkway - Suite 200

Norcross, GA 30093 | t: 770.246.8600

Sales & Product Information

sales@ami.com | t: 800.828.9264

Technical Support

support@ami.com | t: 770.246.8645

www.ami.com