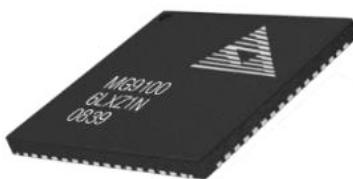# MG9100 NVMe SSD Universal Backplane Management (UBM) Controller for NVMe/SATA/SAS Backplanes

The AMI MG9100 controller enables the world's leading enterprise system builders and data center solution providers to design low-cost, robust backplane solutions for U.2/U.3 NVMe, SAS and SATA-based storage subsystems.

The AMI MG9100 controller helps optimize backplane layouts with the latest enclosure management technologies. This highly integrated and space-optimized chip is available in compact QFN-64 package (9mm x 9mm) and supports all the features needed in a modern, state-of-the-art SAS/SATA/NVMe backplane. This chip can also manage backplanes with a combination of SAS/SATA and NVMe SSDs.

Benefits

The MG9100 backplane controller ships ready to use, with no firmware or programming required at power-on. Its firmware is upgradable through SMBus™ from the host BMC. Communication with the UBM controller on the host with two UBM SMBus buses on the MG9100 is done through the Universal Backplane Management (UBM) protocol. Legacy protocols such as SGPIO (SFF-8485), BMC, VPP/SHP are also supported by the MG9100 for LED management of NVMe and SAS/SATA drives.

Highlights:

- Supports U.2 and U.3 Drives

- Supports UBM enclosure management through Dual/Quad UBM SMBus from UBM controller on the host

- Supports enclosure management of direct-attached

- PCIe®/NVMe™ SSDs connected to Intel®/AMD CPU0 & CPU1 through dual VPP/SHP SMBus

- Enclosure management of PCIe/NVMe SSDs connected to Broadcom®/Microsemi® PCIe switches

- Supports two channels of SGPIO (SFF-8485) bus for enclosure management of SAS/SATA drives

- Supports IBPI specification (SFF-8489)

MG9100 Backplane Controller

Benefits

Developed to reduce latency and provide faster CPU to data storage device performance, NVMe (Non-Volatile Memory Express) is a scalable, high performance specification for accessing solid state drives (SSDs) attached directly to the PCI Express bus. The MG9100 backplane controller leverages the signals on the NVMe/SAS/SATA drive connector (SFF-8639) to detect drive presence, type, and activity.

LED management of NVMe SSDs is done either through UBM SMBus or through Host Hot-Plug VPP or SHP SMBus. For SAS/SATA drives, this is done through the SGPIO (SFF-8485) specification. Optionally, LED management can also be done with proprietary BMC SMBus commands.

The MG9100 backplane controller also supports 2-LED and 3-LED IBPI blinking patterns, along with many pre-defined custom LED blinking patterns. Custom blinking patterns can also be downloaded through the BMC SMBus.

The MG9100 backplane controller provides power disable/ device sleep outputs for SAS/SATA & NVMe drives. It can also issue PCIe resets to individual dual-ported PCIe/NVMe SSDs, when such a command is received from the host.

Highlights:

- Supports optional enclosure management of NVMe/SATA/ SAS drives through BMC SMBus

- Supports activity and status LEDs for each drive
  - Both 2-LED and 3-LED blinking supported for up to eight drives
  - Separate LEDs for activity, locate & fail drive states
  - Supports preloaded and downloadable custom LED blinking patterns
  - Supports global act and global fail LEDs
  - Support for up to 32 drives with four MG9100 controllers

- Power disable support for SAS/SATA/NVMe drives

- Supply range: 3.3V +/- 5%

- Small QFN-64 Package with 9 mm x 9 mm pin outline

- Ships ready to use, no firmware or programming required

- Firmware upgradeable through SMBus from host BMC

- Diagnostics and FW upgrade tools available for Windows® & Linux®

For more information please visit the request form at ami.com/bpc

MG9100 Backplane Controller