

Product Brief

Key Features

- High-Performance I/O Processor
 - 6 MB of on-chip memory
- Hardware Secure Boot
- PCIe 4.0 Host Interface
 - Supports x4, x2, x1 PCIe lanes at a transfer rate up to 16.0 GT/s per lane, full duplex
 - Lane and polarity reversal
 - Supports End-to-End CRC (ECRC) and Advanced Error Reporting (AER)
 - PCIe hot plug support
 - Variable PCIe bandwidth negotiation
- x8 Tri-Mode Device Lanes (PCIe Gen4/SAS-3/SATA):
 - x4, x2, x1 PCIe device port configurations
 - Supports 12 and 6 Gb/s SAS and 6 Gb/s SATA data transfer rates
 - Spread spectrum clocking
 - Supports SSP and SATA protocols
 - Supports narrow and wide ports
 - T-10 End-to-End Data Protection (EEDP)
 - SAS 2.1 power management
 - Separate Refclk Independent SSC (SRIS)
 - PCIe application layer supports NVMe
 - 2 NVMe devices supported

SAS3808N Tri-Mode IOC

PCIe 4.0 x4, 8-port SAS/SATA/NVMe IOC Featuring Tri-Mode SerDes Technology

Optimized for Protected Boot and Motherboard SATA Applications

Broadcom® Storage

Broadcom enables high-performance storage connectivity and flexible system designs that support various combinations of SAS, SATA, and NVMe devices. Broadcom offers the industry's broadest portfolio of storage solutions, backed by decades of experience and trusted by the world's leading server and storage suppliers. Broadcom provides the building blocks for storage solutions that help customers understand, prioritize, store, and protect critical data.

Overview

The SAS3808N IOC, based on the industry-leading Fusion-MPT™ (Message Passing Technology) architecture, supports up to 8 SAS/SATA devices and up to 2 PCIe devices direct-attached. This Gen 4.0 PCIe x4, 8-port IOC, in a footprint-optimized package, delivers power reductions over previous generations and features Tri-Mode SerDes Technology that enables a seamless operation of SAS, SATA, and NVMe storage devices from any system design.

The 8-port Tri-Mode IOC device interface provides SAS data transfer rates of 12 and 6 Gb/s per lane, SATA data transfer rates of 6 Gb/s, or PCIe data transfer rates of 16.0, 8.0, 5.0, and 2.5 GT/s. The device automatically negotiates between the speeds and protocols. The SCSI Protection Information for early detection of and recovery from data corruption, and Spread Spectrum Clocking (SSC) for EMI reduction are supported.

The SAS3808N host interface supports 4 PCI Express (PCIe) lanes and complies with the PCIe 4.0 specification. It also incorporates power management, MSI/MSI-X, and legacy interrupt generation.

Broadcom provides a complete suite of industry-standard operating system drivers and supports Virtual Operating Systems with device emulation and para-virtualization. The Hardware Secure Boot feature, which permits only authenticated firmware to execute, requires the controller to boot from an Internal Boot ROM (IBR) to establish the initial root of trust. Hardware Secure Boot authenticates and builds a chain of trust with succeeding software using this root of trust.

Key Features (cont.)

- Advanced Power Management support
 - Slumber and Partial power mode support for SAS and SATA devices
 - Variable PCIe bandwidth negotiation
- External memory interface support
 - SPI-based Flash ROM
- Communication Interfaces
 - I²C interfaces for enclosure management services
 - UART interface for debug
- SFF-8485 Compliant, SGPIO
- JTAG support

Applications

- Direct-attached SAS/SATA/NVMe IOC solutions for server and storage applications
- SAS/SATA/PCIe host bus adapter
- Cost effective, single-chip solution for protected boot and motherboard SATA applications supporting up to 8 direct-attach SAS/SATA drives or 2 NVMe drives
- Utilize NVMe-attached SSDs with confidence of industry-leading device management and error recovery

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 Broadcom.

Specifications

Attribute	3808N
PCIe Host Links	x4, Gen 4.0
SAS Port Configurations (Lanes)	x1/2/4 (8)
PCIe Port Configurations (Lanes)	x1/2/4 (8) 12 Gb/s
Processor Core	Arm A15
Context RAM	6 MB
Power (WC/TYP)	7.8W/6.6W
Process	16 nm
Package Type/Size	696 FCBGA (16.5 mm × 19.5 mm)