

PM8044 ☆

SXP 36x12G SAS Expander

Status: In Production

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Features:

- SAS-3 T10 zoning for secure storage
- Ultra low switching latency for improved system performance
- SAS and SATA edge-buffering preserves customers' investment by improving performance with existing 3G and 6G drives
- Table-to-table routing removes need for keyed connectors
- Integrated Ethernet port for seamless interface to management entity
- Integrated MIPS processor for enclosure management

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Device Overview

Summary

The SXP 12G 36-port SAS expander features SAS-3 T10 zoning, self-configuration, table-to-table routing, and an integrated MIPS processor for SES and enclosure management support. All SXP expanders also feature a rich and robust customizable SDK for enclosure management and system level diagnostics and monitoring that offers our customers a clean migration path for their code between product generations.

Parametrics

Name	Value
Product Type	SAS Expander
Port Count	36
Generation	12 Gbps
Physical Dimensions	25 mm x 25 mm

Additional Features

- SAS-3 T10 zoning for secure storage
- Ultra low switching latency for improved system performance
- SAS and SATA edge-buffering preserves customers' investment by improving performance with existing 3G and 6G drives
- Table-to-table routing removes need for keyed connectors
- Integrated Ethernet port for seamless interface to management entity
- Integrated MIPS processor for enclosure management
- Firmware compatible with Microchip SAS 3 Gbps and 6 Gbps SAS expanders and stand-alone enclosure management controllers
- Optical SAS support
- Early power off warning (EPOW) support
- SAS and SATA edge-buffering support
- Ultra-low switching latency to improve system performance
- Quad SPI or parallel flash support; optional inline ECC on the parallel flash
- T10 zoning support (up to 256 zones)
- Port mirroring for system debug
- Real-time eye capture with enhanced BER eye mask and estimation
- Non-disruptive zero down time firmware update support
- Position-independent firmware image support to simplify firmware image management/download
- Compatible enclosure management firmware architecture with SXP 3G/6G products
- Real-time clock (1 µS counter up to 35+ years)
- Enhanced processing subsystem (MIPS 34Kc at 600 MHz)
- Backward-compatibility with Microchii's 6G/3G SXP devices

High-Speed I/O

- SAS-3 (12 Gbps, 6 Gbps, 3 Gbps, 1.5 Gbps) and SATA-3 (6 Gbps, 3 Gbps, 1.5 Gbps) operation
- Support for up to 4K SAS addresses
- Automated decision feedback equalizer (DFE) per SAS-3
- Programmable continuous time linear equalizer for SATA-3
- Supports spread-spectrum clocking (SSC) per SAS/SATA-3
- Per-PHY configurable transmit and receive SSC
- Per-PHY programmable transmit amplitude and emphasis
- Integrated resistive termination
- SAS 3.0-compliant back-channel training (SAS3 speed negotiation)

Peripheral Interfaces

- 4 UART interfaces for system monitoring and debugging

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- 4 SGPIO interfaces (or additional TWI per SFF-8448)
- Up to 62 GPIO pins
- Eight dedicated two-wire interfaces (up to twelve total) for device configuration and control of external interfaces
- SPI, DSPI, and QSPI interface
- JTAG and EJTAG interface

Statistics and Performance Monitoring

- Per-port error counters for comprehensive diagnostic capability
- Programmable PMON counters and interrupt generation
- Per-link PRBS and CJPAT pattern generators and loop-backs for linkintegrity diagnostics
- Real-time clock

Firmware Development Kit

- Zoning configuration interface
- SAM4/SPC4/SES3-compatible SES target with Enclosure Management Application reference design
- SAS-3-compatible protocol stack in virtual SAS/SMP port
- SSP/STP Initiator API supports communication with SSP/STP targets over SAS links
- SMP routing management including topology discovery
- Firmware download over multiple in-band and out-of-band interfaces
- Expander diagnostics API
- Disk spin-up control and disk qualification API
- Peripheral drivers for TWI, UART, SGPIO, and Ethernet interfaces
- Error detection, logging, and reporting

Chiplink Diagnostic Utility

- Supports advanced features for validation, characterization, and debugging of Microchip expanders
- Includes full SAS tool suite and a macro interface for user-authored animation scripts

Third Party Support

- Green Hills MULTI development environment and EJTAG debugger

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