The PM8204 and PM8205 offer industry leading performance and power savings with support for hardware RAID 0/1/10/5/50/6/60 and native HBA modes.

These fourth generation RAID-on-Chip devices offer a comprehensive feature set for enterprise server data storage solutions and best-in-class performance. This highly integrated solution offers industry leading low-power and several BOM consolidation advantages over competing solutions, resulting in a reduced total cost of ownership.

The PM8204 and PM8205 support Microsemi Smart Storage solution drivers for all major operating systems and a comprehensive set of management tools, including a GUI and CLI.

### Highlights
- RAID 0, 1, 10, 5, 50, 6, and 60 with hardware acceleration
- Supports 1 GB, 2 GB, or 4 GB DDR4 memory with speeds up to 2133 MT/s, providing access to volume DDR at top-line performance
- Compatible with Microsemi Smart Storage solution drivers for all major operating systems and Microsemi Smart Storage solution unified management utilities
- The PM8205 includes support for maxCrypto controller-based encryption

### Features

**SmartRAID Solution**
- Flexible configuration for RAID mode
- Displays raw devices on connector
- RAID Build modes
  - Quick Initialization
  - Background Initialization
  - Rapid Parity Initialization
- SMP commands using ARCCONF
- SAS dual path failover (RAID stack managed Active/Standby)
- Dynamic sector repair
- Split mirror and combine
- Copyback hot spare
- Heal array and Move array
- Bootable array support
- Erase drive
- Configurable stripe size
- Bad stripe marking
- Hot spare support (dedicated, global, or predictive)

**Ultra-High Performance and Feature-Rich**
- Persistent logging for RAID and HBA
- 4K native support for RAID and HBA
- Adapter power management modes
- Multiple LUN support
- Support for up to 238 raw devices
- Support for up to 238 target devices in RAID mode
- Supports up to 64 SAS/SATA logical/RAID volumes
- Up to 1.4M IOPS performance (4K random reads)
- Up to 140K IOPS RAID 5 performance (4K random writes)
- SAS expander support
- Transport Layer Retry (TLR) support
- Baseboard management controller (BMC) support with Management Component Transport Protocol (MCTP) over PCIe or I2C
- Enclosure Management: SES-2/3
- SGPIO: SFF-8485
- IBPI: SFF-8489
- SGPIO as a virtual SES enclosure: SFF-8448
- Up to 6.9 GB/s bandwidth
- Up to 3.6 GB/s RAID 5 throughput
- Hot plug drive support
- S.M.A.R.T. diagnostic access
- Supports eight lanes of PCIe 3.0 to the host, each lane supports PCIe Gen 3 rates of up to 8.0 Gbps
- SATA Native Command Queuing (NCQ)

**Microsemi Storage Management Utilities**
MaxView provides both server-based and remote administration. This fully browser-based tool supports all standard browsers and is available through a USB boot image. MaxView controller management components include:
- MaxView GUI
- ARCCONF CLI
- Event Monitor (event logging and email alerts)
- VSphere plug-in
- OpenStack plug-in
- Smart Storage Administrator CLI
Microsemi 12 Gbps Smart RAID-on-Chip Storage Controllers
8-Port SRCv+ and SRCe+

Third-Generation Green Backup
- Integrated controller automatically backs up DDR cache to NAND flash after a power failure
- ONFI 1.0, 2.x, and 3.0

Tools for Setup and Troubleshooting
Microsemi provides a complete suite of design-in collateral to support embedded designs with this product, including reference designs, detailed hardware specifications, and design-in guides.
- UEFI HII configuration tool
- CTRL-A Legacy BIOS configuration tool
- ChipLink diagnostic tools
  - Extensive debug, diagnostics, configuration, and analysis tools with an intuitive GUI
  - Access to configuration data, management capabilities, and signal integrity analysis tools such as real-time eye capture
  - Connects to device over UART

Operating System Support
- Extensive operating system supports includes major software releases for Microsoft Windows/Server, VMware ESXi, Red Hat Enterprise Linux, SUSE Enterprise Linux, Ubuntu, CentOS, XenServer, Fedora, Debian, and Solaris
- Certification for Microsoft WHQL, VMware IOVP, and VSAN

High-Speed I/O
- x8 PCIe Gen 3 8 GT/s
- PCIe link rates supported: 8 GT/s, 5 GT/s, 2.5 GT/s
- PCIe-compliant link training and manual PHY configuration
- 8x SAS-3 PHYs for high-speed targets
- SAS link rates supported: 12 Gbps, 6 Gbps, 3 Gbps
- SATA link rates supported: 6 Gbps, 3 Gbps, 1.5 Gbps
- SAS or SATA operation on a per-PHY basis

High-Speed I/O (continued)
- Independent per-channel selectable high-speed outputs support multiple programmable levels of pre-emphasis and output swing
- Multiple programmable levels of receive equalization
- Integrated resistive termination
- Automatic negotiation of link speed
- Decision Feedback Equalizer provides robust recovery of 12 Gbps SAS signals over lossy channels

Peripheral I/O Interfaces
- Seven multi-master and two master-only two-wire interfaces (TWIs) support variable bit rates up to 400 Kbps
- Two industry-standard 16750 UARTs
- Seven SFF-8485-compliant serial GPIO (SGPIO) ports
- Up to 30 GPIO ports depending on SGPIO port configuration
- Firmware API for peripheral control, including features such as activity LED, UART configuration, zoning configuration, inter-processor communications, and enclosure control

Note: Some peripheral I/O interface pins are multiplexed.

maxCrypto Encryption (PM8205 Only)
- AES data encryption and decryption with key sizes of 128/192/256 bits

Ordering Information

<table>
<thead>
<tr>
<th>Ordering Information*</th>
<th>PM8204B-F3EI</th>
<th>PM8205B-F3EI (with encryption)</th>
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</thead>
</table>

*B. Revision number; F3. package descriptor; E, RoHS 6-compliant; I, industrial temperature.

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