

PM8010 maxSAS SRC 8x6G

PCI Express 2.0 8-Port SAS-2 RAID Controller

Preliminary
Product Brief

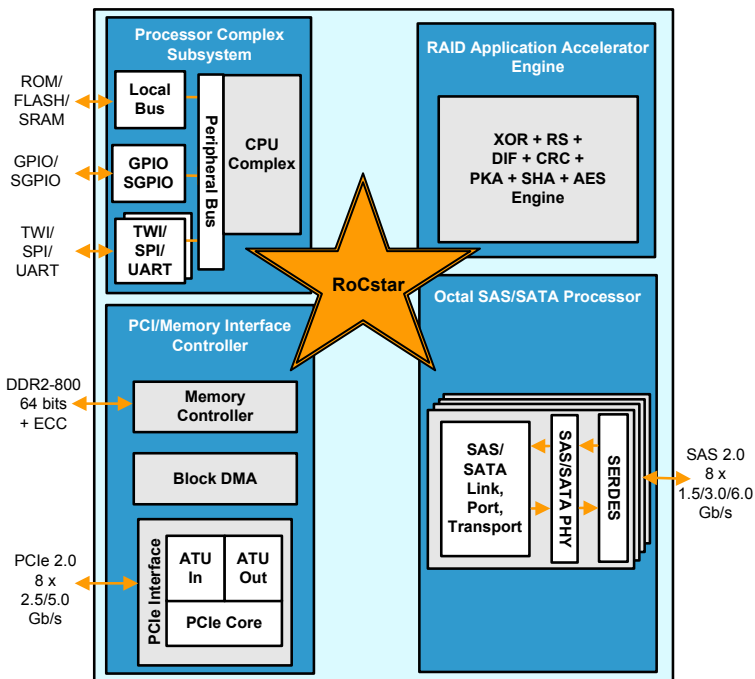
PRODUCT OVERVIEW

The maxSAS SRC 8x6G is a highly-integrated, PCIe x8 to 8-port SAS-2 1.5G/3G/6G RAID-on-Chip (RoC) controller. The SRC 8x6G's break-through RoCstar architecture eliminates the bottlenecks of traditional RoC controllers, providing a quantum leap in server I/O performance, efficiency and scalability.

Integrating a fully offloaded 8-port SAS-2 protocol controller, a high performance PCI-Express 2.0 host port, RAID and T10 DIF acceleration, encryption engines, DDR2-800 memory port, multi-thread-capable IO processor, and additional application acceleration processors — all tied together through the RoCstar ultra-high throughput contention-free architecture, the SRC 8x6G truly changes the landscape of RoC solutions.

The SRC 8x6G offers a scalable solution for phased OEM RAID development to effectively manage end-customer requirements. To accelerate customer porting and development, the architecture provides both a hardware and firmware infrastructure along with a development environment in the form of a product development kit.

BLOCK DIAGRAM



BENEFITS

- Higher system performance with RoCstar contention-free architecture
- Higher system performance with hardware accelerated RAID 5 and 6
- Preserves legacy system support through backward compatibility with SAS 1.0a and PCIe 1.1
- Firmware authentication enables FIPS-140 compliance
- Data security with AES-LRW encryption engine

PRODUCT HIGHLIGHTS

ULTRA-HIGH PERFORMANCE RoCstar ARCHITECTURE

- RoCstar switch architecture eliminates internal bus contention and bus arbitration delays
- Non-blocking internal interconnect for processor cores, ports, peripherals and external memory

EMBEDDED STORAGE APPLICATION PROCESSOR

- Embedded 600 MHz MIPS 34K 32-bit multi-threading IO processor
- 4-way set associative writeback, 32-Kbyte Instruction and Data caches
- Flexible Thread Policy Manager with programmable QoS support
- Multi-thread EJTAG debug and RTOS visibility through Green Hills MULTI IDE

SAS-2/SATA INTERFACE

- Eight-port SAS/SATA 1.5G/3G/6G fully offloaded protocol controller
- Supports SSP, SMP and STP operating as a SAS initiator or target
- Provides SATA host for directly connecting SATA HDD
- 2:1 DWord multiplexing allows maximum bandwidth utilization when using legacy SAS or SATA 3G HDDs
- Hot-plug, staggered spin-up and SATA Native Command Queuing
- Full simultaneous bandwidth up to 600 Mbyte/s per direction per PHY or 1200 Mbyte/s bi-directional per PHY
- Flexible wide-port capability supports any combination of widths up to eight serial interfaces per wide port

PCI EXPRESS (PCIe) PORT

- Eight PCI Express PHYs compliant with base specification 2.0, operating at 5 Gb/s and 2.5 Gb/s per link
- Backwards compatible to PCIe 1.1

DDR2 MEMORY CONTROLLER

- 32/64-bit DDR2 with optional ECC support
- DDR2-533 to DDR2-800 supporting up to 4 GB DRAM
- Full initialization of memory on hardware reset
- Optimized for low latency return of CPU reads

RAID, T10 DIF, AND AES ACCELERATION

- Supports RAID implementations 0/1/10/5/50/6 and 60
- Computes RAID 6 via bit-wise XOR and Reed Solomon (P+Q) on two simultaneous data streams
- Dual parity generated in a single pass, improving performance
- Computes in-place AES encryption with 128, 192 and 256 key length support
- Checking, insertion and replacement of T10 DIF as defined by SBC-2
- Firmware API for accessing subsystem

CONFIGURABLE PERIPHERAL INTERFACES

- NOR interface support for Flash, ROM, EEPROM, and SRAM support
- 8 or 16-bit data transfers
- Four configurable multi-master/slave Two-wire Interfaces (TWIs) supports variable bit rates up to 400 Kbit/s
- Two industry-standard 16750 UART ports
- Single Serial Peripheral interface
- Two SFF-8484 compliant Serial GPIO ports
- Firmware API for peripheral control including features such as activity LED, UART configuration, zoning configuration, inter-processor communications, enclosure control

DEBUG

- CPU EJTAG debug support via Green Hills MULTI with RTOS awareness
- Memory and cache performance monitoring

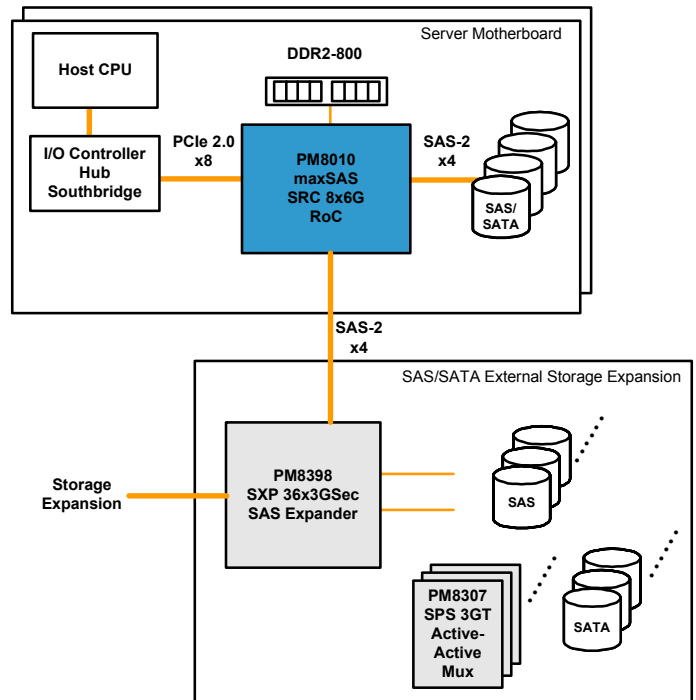
PHYSICAL

- 672-pin 27 x 27 mm BGA package
- 1.0 mm ball pitch
- 90 nm CMOS technology
- 6 W to 13 W typical power operation, depending on configuration

APPLICATIONS

- PCIe RAID cards
- RAID on Motherboard
- SAS Host Bus Adapter
- Servers, Workstations and External RAID storage systems

SERVER RAID APPLICATION



FURTHER RESOURCES

PMC-SIERRA SAS AND SATA STORAGE SOLUTIONS

www.pmc-sierra.com/storage

TECHNICAL DOCUMENTATION

www.pmc-sierra.com/products/DocFind.html

Corporate Head Office:
PMC-Sierra, Inc.
Mission Towers One
3975 Freedom Circle
Santa Clara, CA, 95054, U.S.A.
Tel: 1.408.239.8000
Fax: 1.408.492.1157

Operations Head Office:
PMC-Sierra, Inc.
100-2700 Production Way
Burnaby, BC V5A 4X1 Canada
Tel: 1.604.415.6000
Fax: 1.604.415.6200

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