Storage Solutions

Serial ATA
Host Controller Solutions
88SX5080/88SX5081/88SX5040/88SX5041

PRODUCT OVERVIEW

The Marvell® 88SX5040/88SX5041 and 88SX5080/88SX5081 devices are the industry's first 4-port and 8-port Serial ATA PCI-X host controllers. The 88SX5040/88SX5041 and 88SX5080/88SX5081 products offer OEMs an ideal solution for developing Serial ATA storage arrays and subsystems. The 88SX5040/88SX5041 and 88SX5080/88SX5081 PHYs leverage four generations of production-proven Serializer/Deserializer (SERDES) technology from the Marvell Alaska® Gigabit Ethernet PHY solutions. Configurable per-port PHY pre-emphasis and amplitude settings enable high-performance Serial ATA backplane implementations. Selectable Spread Spectrum Clocking (SSC) provides optimal Electromagnetic Interference (EMI) performance for high-density drive subsystems.

The 88SX5040/88SX5041 and 88SX5080/88SX5081 devices are developed to support enterprise-class storage systems. The 133 MHz PCI-X interface provides a high-speed connection to industry-standard embedded system controllers and server/workstation chipsets. The 88SX5040/88SX5041 and 88SX5080/88SX5081 product's Tag Command Queuing and Enhanced DMA (EDMA) architecture enable direct support for both standard hard drives and advanced hard drives with Serial ATA I/ATA-6 Tag Command Queuing. The EDMA engine offloads the host processor by automating the process of sending command requests and retrieving responses for each of eight request and response queue pairs, offering SCSI performance levels. The software Application Programmer Interface (API) provides a SCSI programming interface to the application, minimizing host processor loading.

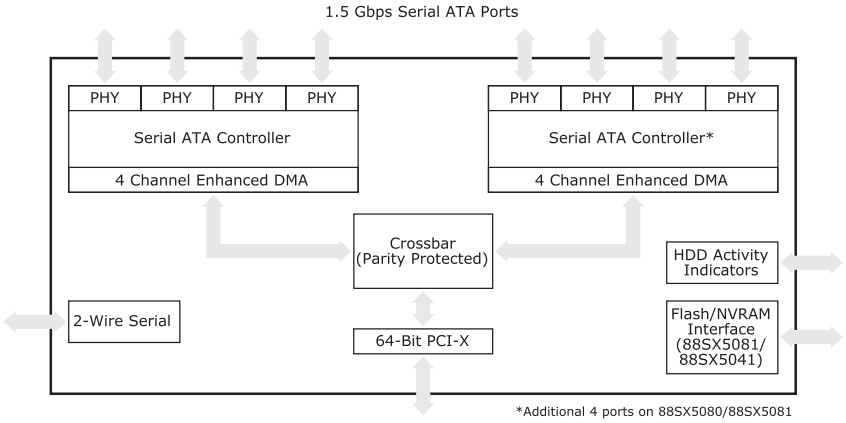

Fig 1. Serial ATA Host Controller (88SX5080/88SX5081) Block Diagram

FEATURES	BENEFITS
• Tag Command Queuing support	• Significantly increases HDD and system performance
• Enhanced DMA	• Automates request/response command processing mechanism, reducing CPU overhead
• SCSI programming model	• Optimizes system performance by reducing CPU overhead
• Programmable interrupt coalescing	• Allows CPU to service interrupts in groups, maximizing performance
• 64-bit/133 MHz PCI-X	• Provides a standard, high-bandwidth CPU subsystem interface
• Internal data path parity protection	• Supports data integrity on internal as well as external interfaces
• Programmable pre-emphasis and amplitude PHY settings per port	• Enables Serial ATA backplane designs of up to 30 inches of PCB trace
• Flash BIOS Interface (88SX5081/88SX5041)	• PCI Expansion BIOS interface for RAID Adapter and RAID on Motherboard applications
• Spread Spectrum Clocking (SSC)	• Reduces EMI for enterprise storage and server applications

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APPLICATIONS

The 88SX5080/88SX5081 and 88SX5040/88SX5041 controllers can be used in a variety of storage applications. When combined with a microprocessor subsystem, implementing devices such as the Marvell Discovery™ system controllers, the 88SX5080/88SX5081 and 88SX5040/88SX5041 devices enable high-performance Serial ATA solutions for Network Attached Storage (NAS), Storage Area Network (SAN), Direct Attached Storage (DAS), and Nearline Storage Array applications. In addition, the 88SX5080/88SX5081 and 88SX5040/88SX5041 products provide an ideal platform for development of Serial ATA RAID Adapters and RAID on Motherboard solutions. The performance features implemented on the 88SX5080/88SX5081 and 88SX5040/88SX5041 devices deliver SCSI HDD-based system performance levels at Serial ATA price points.

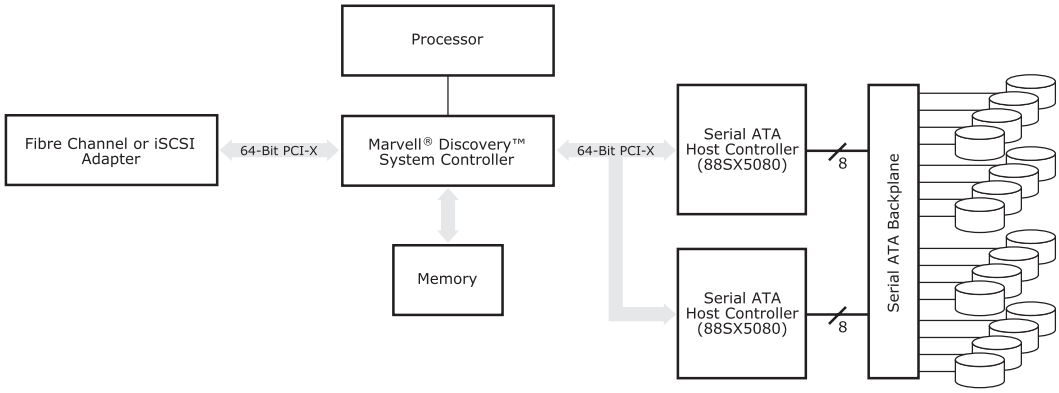

Fig 2. Serial ATA Host Controller (88SX5080) Applications Diagram

THE MARVELL ADVANTAGE: The Marvell 88SX5080/88SX5081 and 88SX5040/88SX5041 Serial ATA host controllers come with a complete set of hardware and software development tools to assist engineers developing next generation storage networking solutions with product evaluation and development. Marvell's worldwide field applications engineers collaborate closely with storage networking equipment vendors to develop and deliver innovative products to market. Marvell utilizes recognized world-leading semiconductor foundry and packaging services to reliably deliver high-volume and low cost total solutions.

For more information, visit our website at www.marvell.com.

MARVELL®

Marvell Semiconductor, Inc.

700 First Avenue
Sunnyvale, CA 94089

Phone 408.222.2500

www.marvell.com

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