Marvell 88SE9128/9120/9125
SATA 6Gb/s and PATA Host Controllers

▶ PRODUCT OVERVIEW

The Marvell® 88SE91xx host controllers offer cost-effective solution of connecting Serial ATA (SATA) or Parallel ATA (PATA) peripherals to a PCI Express (PCIe) 2.0 host. Each host controller supports one or more 6 Gb/s SATA and one 133 MB/s PATA peripheral interface ports and a one-lane 5.0 Gb/s PCIe host interface. In addition, it features hardware RAID to offload host CPU and AHCI interface for inbox driver support. A complete suite of RAID 0/1 software is provided, including the OS device driver, BIOS/FW, and a management utility.
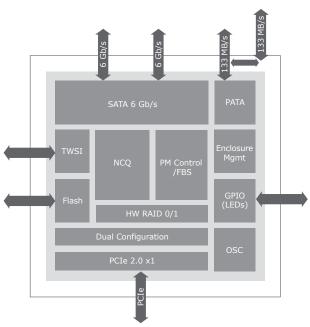

Fig 1. Block Diagram

▶

MODEL	88SE9128	88SE9120	88SE9125
• Marvell RAID Software	Yes	Non-RAID	N/A*
• 6 Gb/s SATA Ports	2	2	2
• One 133 MBps PATA Port	Enhanced mode with ATAPI protocol support		No
• SATA 3.0 Compliant	6 Gb/s SATA PHY with speed negotiation to backward support 3 and 1.5 Gb/s		
• PCIe 2.0 Compliant	Support 1x PCI Express 2.0 interface (5.0 Gb/s)		
• Native Command Queuing	32 outstanding commands per port for high performance		
• eSATA Support	Flexible SATA ports support internal or external (up to 5m) SATA links		
• Hardware RAID	Yes	No	Yes*
• AHCI Inbox Driver Support	Yes	Yes	Yes
• Enclosure Management	I2C support		
• Two-Wire Serial Interface (TWSI)	Interface for external EEPROM containing configuration information		
• GPIO Support	LEDs status monitoring		
• SPI Flash Interface	External flash containing configuration data and/or boot code		
• Port Multiplier Support	RAID support through Marvell RAID utility (MRU) and driver	Yes	Yes
• FIS-Based Switching	Better performance with simultaneous commands		
• On-Chip Oscillator	Low-cost crystal support		
• Power	1W	1W	1W
• Package Size/Type	9mm×9mm / 76-pin QFN		

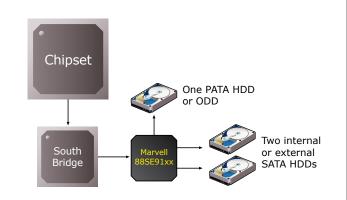*support customer's own RAID software

APPLICATIONS

The Marvell 88SE91xx SATA/PATA host controllers are ideal solution for RAID on motherboard (ROMB) and cost-effective host bus adapter (HBA). It allows PCIe-based host systems to control up to two SATA 6Gb/s hard drives and/or one PATA hard drive. Embedded with ARM-based CPU makes this product a pure hardware RAID controller and enables inbox driver support without additional driver installation. The included Marvell RAID Utility (MRU) provides a user-friendly interface to end users while the Marvell RAID driver allows the drives to be used with SATA port multiplier for increased system performance and capacity.

For embedded platforms, home NAS/DVR/set-top boxes, or HBA vendors to develop their own RAID software or use OS inbox drivers, the Marvell 88SE9125 is available to fit such applications.

Fully programmable on-chip transceivers support SATA, eSATA, and xSATA at 6 Gb/s and backward compatible to 1.5 and 3 Gb/s. Built-in support for SATA Port Multipliers with FIS-based switching ensures maximum performance.

The small footprint of the device and the very few required external components take up a minimal amount of board space, easing system design and reducing cost. In addition, embedded enclosure management via I2C protocol further reduces system cost.
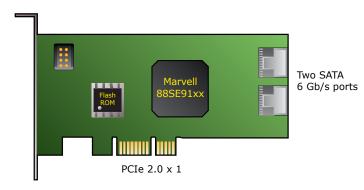
Fig 2. RAID-On-Motherboard Application

Fig 3. SATA RAID HBA Application

THE MARVELL ADVANTAGE: Marvell chipsets come with complete reference designs which include board layout designs, software, manufacturing diagnostic tools, documentation, and other items to assist customers with product evaluation and production. Marvell's worldwide field application engineers collaborate closely with end customers to develop and deliver new leading-edge products for quick time-to-market. Marvell utilizes world-leading semiconductor foundry and packaging services to reliably deliver high-volume and low-cost total solutions.

ABOUT MARVELL: Marvell is a leader in storage, communications, and consumer silicon solutions. Marvell's diverse product portfolio includes switching, transceiver, communications controller, processor, wireless, power management, and storage solutions that power the entire communications infrastructure, including enterprise, metro, home, storage, and digital entertainment solutions. For more information, visit our Web site at www.marvell.com.