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[Multiplier Chips And Port Selector Implement Efficient SATA Interfaces](#)

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Also known as IDE, the Advanced Technology Attachment (ATA) standard has dominated data transfer to and from hard-disk drives for years. But as the need to address storage units far from the server grows and transfer speeds increase, this parallel ATA standard becomes unusable.

The Serial ATA (SATA) interface extends the range and speed of disk data transfer, solving these problems. Exar's Xstor port selector and multiplier chips make implementation of this interface fast and easy.

The Exar XRS10L140 is a 1:4 port multiplier for SATA II applications in enterprise-class disk-array systems. It includes the 1:4 port multiplier and a two-port selector for dual hosts—an industry first. Both support the 3- and 1.5-Gbit/s data rates with rate detection and speed negotiation features.

These devices address the challenges of interfacing with disk drives. For example, backplanes are getting faster and longer. Dual-ported drives need to be addressed. SATA wants to go outside the box. SATA drives are now in Fibre Channel systems for secondary storage. Failover systems are necessary for SATA-based arrays. SATA systems need external connectors. And, there's a need for simple disk-based backup systems.

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The XRS10L140 port multiplier lets the SATA host server communicate with up to four SATA storage devices. It's designed to be part of the board that plugs into the PCI bus on the host or in a RAID controller box. The four ports to the drives may use up to 1 m of copper lines on an FR-4 PC board or up to 15 m of unequalized copper cable, usually coax.

The 3- and 1.5-Gbit/s speeds are attained by including a superior analog front end with selectable emphasis and equalization to extend the link budgets and improve signal integrity. A direct-sequence spread-spectrum clocking feature greatly reduces electromagnetic interference. The device fully complies with all recent SATA specifications.

Other features include multiple power-down modes, out of band (OOB) signaling, support for the MDIO bus and self test, an I²C interface, and a JTAG test port. Made with 0.13- μ m CMOS, the device operates from a 1.2-V supply. It comes in a 100-pin quad-flat no-lead (QFN) package.

The XRS10L240 includes all the features of the XRS10L140 ([see the figure](#)). It also offers a two-port selector that enables the four storage devices to work with two different hosts. This permits implementation of a failover path from two independent hosts.

The port-selector function also is used when dual hosts such as I/O controllers must access single-port disk drives in high-availability storage subsystems where redundancy and load sharing are specified. The XRS10L240 uses the same 100-pin QFN package as well.

The XRS10L140 costs \$8 and the XRS10L240 costs \$25, both in 1000-unit quantities. Additional members of the Xstor family will be offered later this year.

Exar Corp.
www.exar.com

Figure 1



The Exar XRS10L240 is a two-port selector combined with a 1:4 port multiplier that lets two servers access four RAID or other disk-drive arrangements using a 1.5- or 3-Gbit/s SATA interface.

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