ALASKA™ II

88E1020/88E1020S Dual-Port Gigabit Ethernet Transceivers

Marvell Accelerates Deployment of Gigabit Ethernet to the Desktop

Gigabit Ethernet Performance

The Marvell Alaska™ II Gigabit Ethernet transceiver combines the functionality of two 10/100/1000BASE-T Gigabit Ethernet PHYs. This device achieves a new industry milestone for Gigabit integration and further accelerates the deployment of Gigabit Ethernet to the desktop. The Alaska II device is fabricated using 0.18 micron CMOS process technology and provides network manufacturers with low power and high port count density Gigabit Ethernet solutions.

Using advanced Digital Signal Processing (DSP)-based mixed-signal technology and power management techniques, the Alaska II PHY achieves low power dissipation. To optimize board layout, the Alaska II device is offered in a Ball Grid Array (BGA) package featuring a body width of only 27mm – less than the width of two RJ45 connectors. The combination of low power and reduced PC Board (PCB) real estate enables higher port count Gigabit Switches.

Each port of the Marvell Alaska II Gigabit Ethernet transceiver provides IEEE 802.3 compliant Gigabit Media Independent Interface (GMII) and Media Independent Interface (MII), as well as the de facto standard 10-bit Interface (TBI), allowing for a direct connection to existing Media Access Controller (MAC)/Switches. In addition to GMII and TBI interface support, the Alaska II+ device (88E1020S) offers an alternative 1.25 GHz serializer/deserializer serial interface. The SERDES interface reduces the I/O (Input/Output) pin count from today's implementations requiring as many as 24 pins per port, to only 4 pins per port. The Alaska II+ device is an ideal solution for high density Gigabit Switch designs. Additionally, the device is ideally suited for multiple-port Gigabit media conversion bridging fiber-optic and copper networks.

Each port of the Marvell Alaska II PHY operates at all three data rates currently defined by the IEEE 802.3 Ethernet standard (1000 Mbps, 100 Mbps and 10 Mbps) and implements the IEEE 802.3u compliant Auto-Negotiation function, offering a true "plug and play" system. The device also enables backward compatibility to the installed base of 100 Mbps Fast Ethernet and 10 Mbps Ethernet networks, and incorporates the Auto-MDI/MDIX function at all three speeds offering the benefit of end-to-end wiring tolerance and correction without the need for external crossover cable.

The Marvell Alaska II Gigabit Ethernet transceiver uses DSP architecture, advanced mixed-signal processing and high speed digital circuit technology to implement digital adaptive equalization, echo cancellation, cross-talk cancellation, digital timing recovery, line driver support, encoders, and decoders. Marvell's high precision analog-to-digital converters result in robust performance in noisy environments with the added feature of low power dissipation. Marvell's mixed-signal and DSP design techniques result in high differential/integral linearity, high power supply noise rejection and low error rates.

The Marvell Advantage

The Marvell Alaska II Gigabit Ethernet transceivers leverage technology developed through four generations of PRML read channels designed for the data storage market. The Alaska II Gigabit Ethernet transceivers are the ideal solution for networking systems where high performance, high integration and low power dissipation are absolutely necessary.

Marvell utilizes recognized world-leading semiconductor foundry and package services to reliably deliver high-volume, low-cost solutions.

MARVELL™

MOVING FORWARD FASTER™

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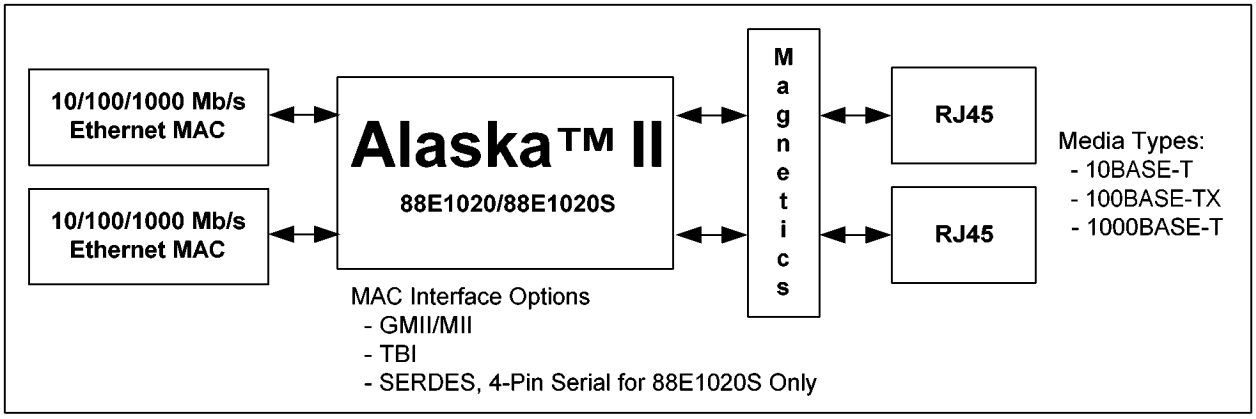

Features:

- Dual-port Gigabit Ethernet over copper transceiver offers highest system integration
- IEEE 802.3 compliant tri-speed (10, 100, 1000) transceivers
- IEEE 802.3 Auto-Negotiation with next page support for auto speed and duplex selection
- Automatic polarity correction
- Auto-MDI/MDIX crossover at all three speeds
- Low power dissipation per port
- GMII/MII interface supported per port
- Ten-bit interface (TBI) supported per port
- SERDES serial interface (88E1020S only)
- Programmable interrupt to minimize polling
- Six direct drive LEDs
- IEEE 1149.1 (JTAG) boundary scan support

- All digital clock recovery and generator circuits
- Advanced mixed-signal DSP techniques
- Advanced baseline wander correction
- On-chip transmit wave-shaping to reduce EMI
- Active internal hybrids for 1000BASE-T
- 0.18 micron standard digital CMOS process
- 376-pin BGA

Benefits:

- Enables higher port density switches
- Reduced number of ICs for Gigabit Switches
- True “plug and play” and fully backward compatible

- Operation over all existing Category 5 UTP cabling infrastructures
- End-to-end wiring tolerance and correction

- Eliminates expensive fans and heat sinks
- Provides a seamless Ethernet solution from standard GMII, MII and TBI interfaces to magnetics
- I/O pin reduction; offers single-chip copper to fiber optic Gigabit media conversion
- Increased reliability for board level testing and manufacturability
- Advanced DSP design
- Provides robust performance over a wide range of operating conditions
- Lower cost magnetics

MARVELL™

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