Transceiver Solutions

Alaska® Quad Gigabit Ethernet Transceivers

88E1040/S, 88E1041/S, 88E1042H

ALASKA®

PRODUCT OVERVIEW

The Marvell® Alaska® family of Gigabit Ethernet (GbE) over copper transceivers are the industry's lowest power, smallest form factor, highest performance, and highest port density solutions in volume production. Targeted at high-density GbE switches, the Alaska Quad transceivers are single-chip devices containing four independent GbE PHYs on a single monolithic IC. Each transceiver performs all of the physical layer functions for 100BASE-TX and 1000BASE-T full or half duplex Ethernet on category 5 (CAT 5) twisted pair cable, and 10BASE-T full or half duplex Ethernet on CAT 3, 4 and 5 cable. The Alaska Quad devices (88E1040S, 88E1041S and 88E1042H) offer additional support of 1000BASE-X through an integrated 1.25 GHz Serializer/Deserializer (SERDES).

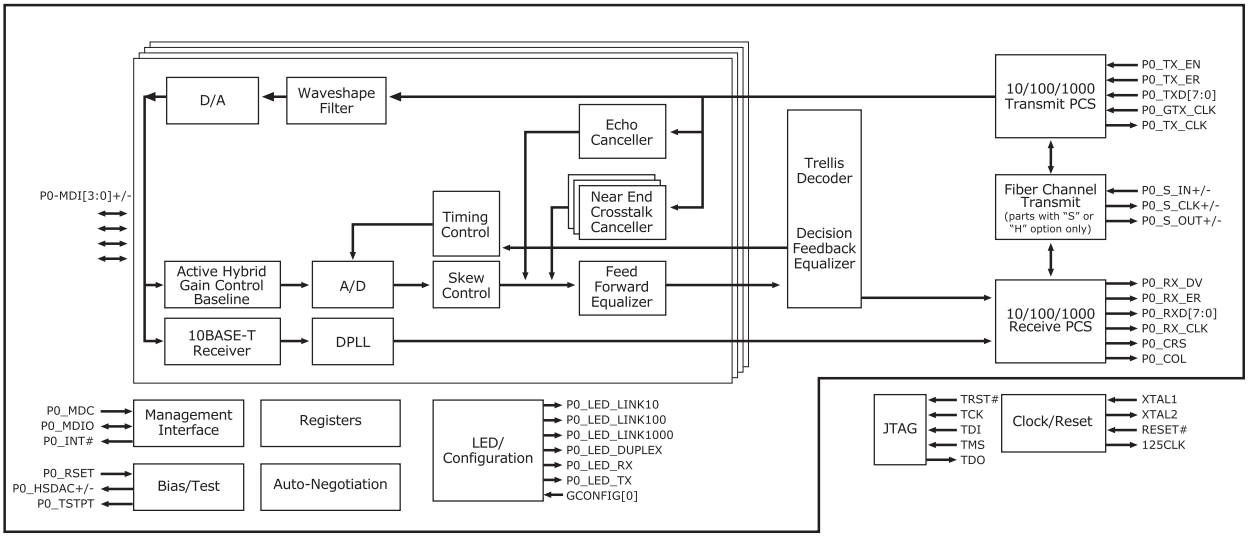

Fig 1. Alaska Quad GbE Transceiver Block Diagram

FEATURES	BENEFITS
• Highly integrated 4-port device	• Enables highly integrated Gigabit switches
• Ultra low power, just exceeding 1W/port	• Enables higher integration and reduced cost
• 10/100/1000BASE-T IEEE 802.3 compliant	• Compatibility with existing installed base of compliant devices
• Supports GMII/RGMII/TBI/RTBI interfaces	• Reduces cost and simplifies PCB layout
• Virtual Cable Tester™ feature	• Remote cable diagnostics for fault detection
• Integrated 1.25 GHz SERDES (881040S, 88E1041S, 88E1042H)	• Supports 1000BASE-X fiber applications
• Media Detect feature automatically detects and configures to either copper or fiber media	• Complete media flexibility
• Automatic support for 2-pair CAT 5 cable (100 Mbps)	• Operates over installed 2-pair cable
• Power management modes	• Reduced system power
• Four RGMII timing modes	• Eliminate the need for on-board delay lines
• User configurable independent Media Access Controller (MAC) interface select	• Allows interface flexibility

MARVELL®

Alaska® Quad Gigabit Ethernet Transceivers

MOVING FORWARD FASTER®

FEATURES

BENEFITS

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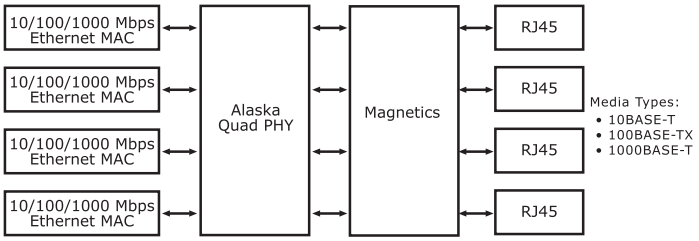
• User programmable individual/group MDC/MDIO support	• Flexible management options
• Auto-MDI/MDIX crossover for all modes of operation	• Eases installation and reduces cost
• Support IEEE 1149.1 (JTAG) and NAND-tree ICT	• Simplifies board level testing/debugging
• Advanced mixed-signal and DSP techniques	• Advanced DSP design
• IEEE 802.3u compliant Auto-Negotiation	• Automatically configures to 10, 100 or 1000 Mbps
• Active internal hybrids for 1000BASE-T	• Lower cost magnetic
• Direct drive LED support	• Eliminates cost of external LED latches and drivers
• Software configurable LED support	• User-defined LED configuration
• User programmable PHY address	• Works with all existing Gigabit switch designs
• Loopback mode	• Assists testing and diagnostics
• 0.15-micron standard digital CMOS process	• Advanced process for reduced power and cost to achieve the highest port density

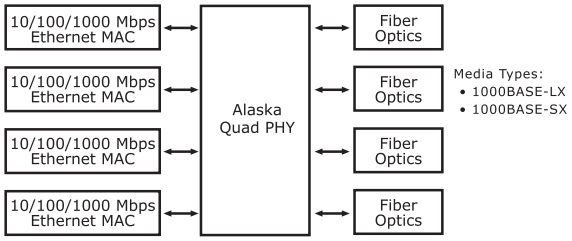
APPLICATIONS

The Marvell Alaska Quad GbE transceivers provide higher port count Gigabit switches, up to 48 ports, offering the industry's highest integration and lowest power dissipation. Through integrated SERDES technology, the devices also offer optional support for 1000BASE-SX/LX Gigabit fiber standards, on a per port basis, enabling mixed-media Gigabit switches. These devices support five different PHY/MAC interface options: GMII, RGMII, SGMII, TBI, and RTBI.



MAC Interface Options:
- GMII/MII (88E1040/88E1040S and 88E1041/88E1041S only)
- TBI (88E1040/88E1040S and 88E1041/88E1041S only)
- RGMII
- RTBI
- SGMII
- Serial Interface (88E1040S, 88E1041S and 88E1042H only)

Fig 2. Alaska Quad GbE Transceiver Copper Application Diagram



MAC Interface Options:
- GMII/MII (88E1040S and 88E1041S only)
- TBI (88E1040S and 88E1041S only)
- RGMII
- RTBI

Fig 3. Alaska Quad GbE Transceiver Fiber Application Diagram

THE MARVELL ADVANTAGE: The Marvell Alaska Quad GbE transceivers come with a complete set of hardware and software development tools to assist network hardware engineers with product evaluation. Marvell's worldwide field applications engineers collaborate closely with network equipment vendors to develop and deliver new competitive products to market on time. 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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