Transceiver Solutions

Alaska® Quad
Gigabit Ethernet Transceiver
88E1141/88E1145

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. The Alaska Quad 88E1141 and 88E1145 transceivers lead the industry with the lowest power consumption (under 3W for the entire device), enabling network systems manufacturers to decrease system cost by reducing both power supply and fan requirements. Additionally, the 88E1145 device offers the smallest package footprint (21 mm x 21 mm) and requires 40% less board space than competing Gigabit solutions. The Alaska Quad products offer additional support of 1000BASE-X through an integrated 1.25 GHz Serializer/Deserializer (SERDES).

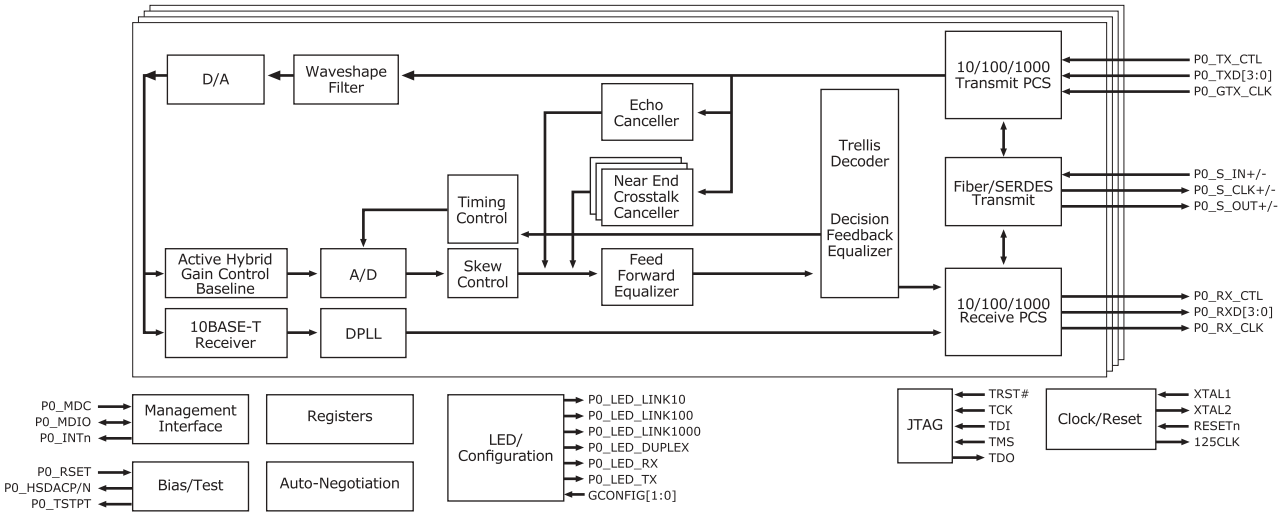

Fig 1. Alaska Quad GbE Transceiver (88E1141/88E1145) Block Diagram

FEATURES	BENEFITS
• Highly integrated 4-port device	• Enables highly integrated Gigabit switches
• Ultra low power, only 0.75W/port	• Enables higher integration and reduced system cost
• 10/100/1000BASE-T IEEE 802.3 compliant	• Compatibility with existing installed base of compliant devices
• Supports GMII/RGMII/SGMII/TBI/RTBI interfaces	• Reduces cost and simplifies PCB layout
• Virtual Cable Tester™ (VCT) feature	• Identification and isolation of cable faults
• Integrated 1.25 GHz SERDES	• 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
• Operation up to 180 meters CAT 5 cable	• Functions over a wider base of cabling infrastructures
• 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

MARVELL®

Alaska® Quad Gigabit Ethernet Transceiver

MOVING FORWARD FASTER®

FEATURES

- IEEE 802.3u compliant Auto-Negotiation
- Active internal hybrids for 1000BASE-T
- Direct drive LED support
- Software configurable LED support
- User programmable PHY address
- Loopback mode

BENEFITS

- Automatically configures to 10, 100 or 1000 Mbps
- Lower cost magnetics
- Eliminates cost of external LED latches and drivers
- User-defined LED configuration
- Works with all existing Gigabit switch designs
- Assists testing and diagnostics

APPLICATIONS

The Marvell Alaska Quad transceivers enable higher port count Gigabit switches, up to 48 ports. Through integrated SERDES technology, the device also offers optional support for 1000BASE-SX/LX Gigabit fiber standards, on a per port basis, enabling mixed-media Gigabit switches. The Alaska Quad products support the GMII, RGMII, SGMII, TBI, and RTBI PHY/MAC interface options.

The Alaska Quad transceivers offer the most advanced feature set including VCT technology used to diagnose the attached cable plant and isolate and report cable faults with one-meter accuracy. Additionally, the devices feature "2-pair downshift" capability for plug-and-play operation in 2-pair cable environments, as well the Media Detect feature which supports both copper and fiber media simultaneously.

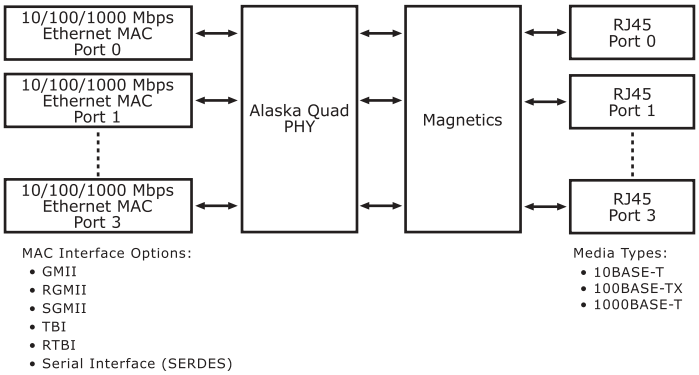

Fig 2. Alaska Quad GbE Transceiver (88E1141/88E1145) Copper Applications Diagram

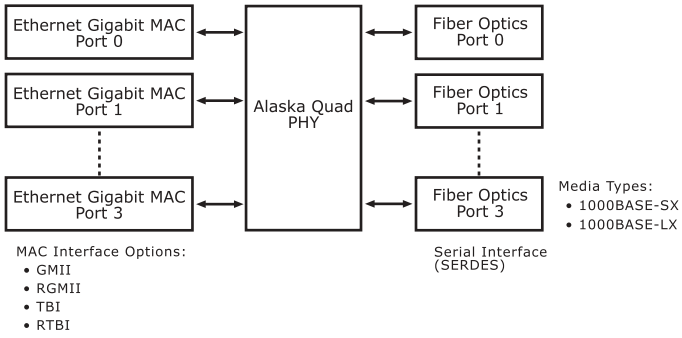

Fig 3. Alaska Quad GbE Transceiver (88E1141/88E1145) Fiber Applications Diagram

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.

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