

Marvell® Alaska® 88E1548/48P

Quad Port 10/100/1000 Mbps Ethernet Transceivers With QSGMII or SGMII Interfaces

Overview

Marvell® Alaska® 88E1548/48P Gigabit Ethernet Transceiver is a physical layer device containing four independent Gigabit Ethernet transceivers. Each transceiver performs all the physical layer functions for 1000BASE-T, 100BASE-TX and 10BASE-T, in full compliance with the 802.3 standards. On the MAC-side interface, the device supports Quad-Serial Gigabit Media Interface (QSGMII) to Copper or Fiber, Quadport SGMII to Copper, or Dual-port SGMII to Fiber.

The 88E1548P version supports the Marvell LinkCrypt® feature, which is based on and implements the IEEE802.1ae MACsec protocol. This version also supports Precise Timing Protocol (PTP) time stamping, which is based on IEEE 1588v2 and IEEE 802.1AS, in both two-step and single-step clock operation.

In addition to supporting Energy Efficient Ethernet (EEE) on the new generation of enabled MACs, these products are also capable of implementing EEE with legacy or non-EEE devices by incorporating EEE buffering.

The device integrates MDI interface termination resistors into the PHY. This resistor integration simplifies board layout and

reduces board cost by reducing the number of external components. The new Marvell calibrated resistor scheme will achieve and exceed the accuracy requirements of the IEEE 802.3 return loss specifications.

This device uses advanced mixed-signal processing to perform equalization, echo and crosstalk cancellation, data recovery and error correction at a Gigabit-per-second data rate. The device achieves robust performance in noisy environments with very low power dissipation.

The 88E1548/48P integrates an Advanced Virtual Cable Tester® (VCT™) enabling fault detection and advanced cable performance monitoring.

The Marvell Alaska family of transceiver products provides the ideal solution for rapid development and deployment of gigabit standalone and switching systems for the Enterprise, embedded, consumer and Metro/service provider market segments.

Block Diagram

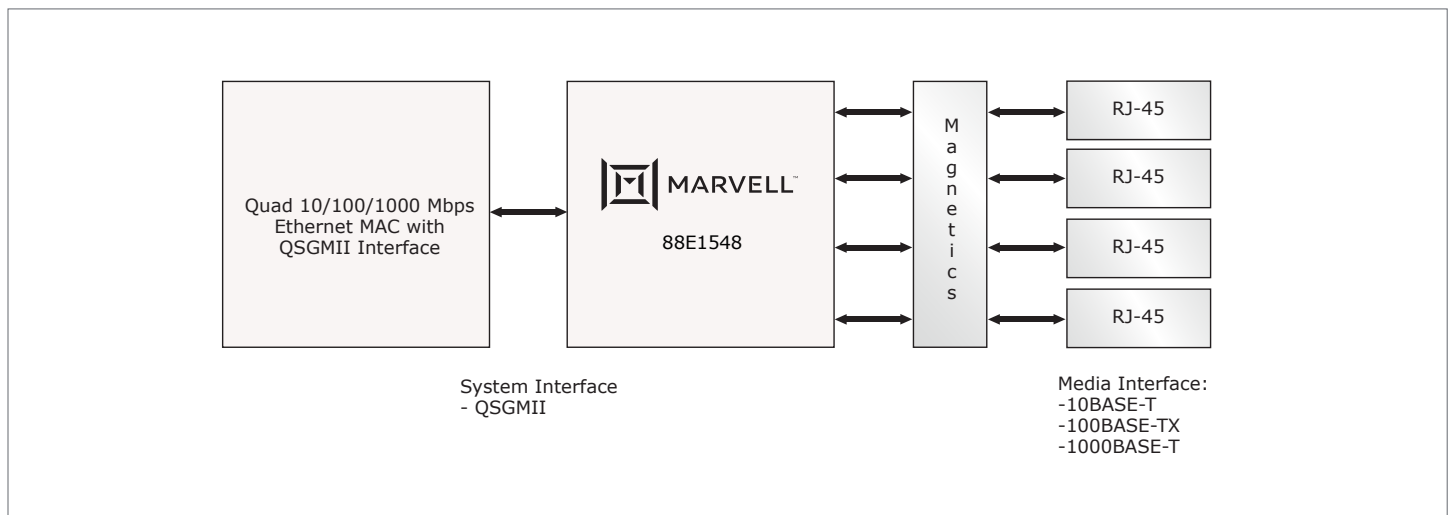


Figure 1. Marvell Alaska 88E1548 in a QSGMII to Copper Application

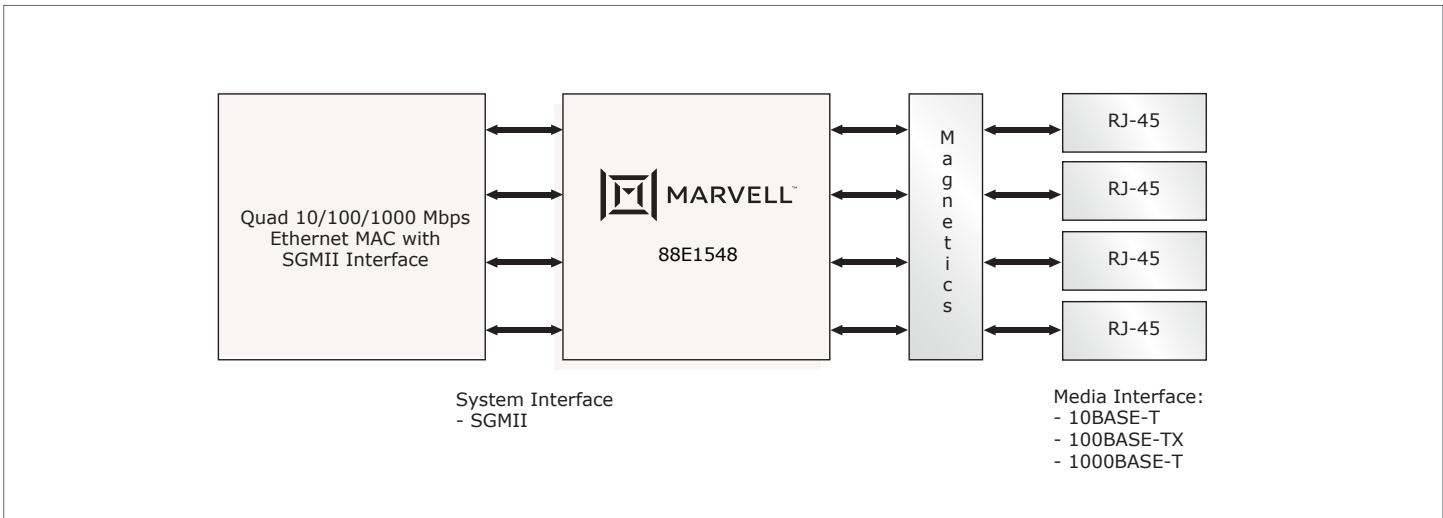


Figure 2. Marvell Alaska 88E1548 in a SGMII to Copper Application

Key Features

| Features | Benefits |
|---|--|
| Support EEE (IEEE 802.3az) - Implements EEE buffering with legacy or non-EEE MAC | <ul style="list-style-type: none"> Extended energy savings through incorporation of IEEE 802.3az standard - Additional support added to allow EEE enablement on non-EEE MACs |
| Supports QSGMII MAC Interface | <ul style="list-style-type: none"> Lower pin count - Simplifies board layout |
| Precise One-Step Timing Protocol (PTP) Time Stamping (88E1548P only) | <ul style="list-style-type: none"> Provides accurate implementation of the IEEE 1588v2 timing recovery protocol |
| Integrated LinkCrypt® Technology | <ul style="list-style-type: none"> Implements IEEE802.1ae MACsec protocol for secure, encrypted layer 2 transmission |
| Advanced Virtual Cable Tester® Technology | <ul style="list-style-type: none"> Detects and reports potential cabling issues to within one meter of the distance to the fault |
| 15mm x 15mm 196-pin TFBGA | <ul style="list-style-type: none"> Environmentally friendly, small form factor for minimal real estate requirements with efficient heat dissipation |

Target Applications

The Alaska 88E1548/48P Transceiver delivers optimal physical layer interfacing and features for a broad range of applications within the Enterprise, embedded, consumer, and Metro/service provider market segments.

The Alaska 88E1548/48P family provides complete Gigabit Ethernet transceiver solutions with complete software compatibility. To shorten system manufacturers’ design cycles and accelerate time to market, Marvell provides complete Alaska reference designs and supporting documentation with schematics, layout files and other documentation.



To deliver the data infrastructure technology that connects the world, we’re building solutions on the most powerful foundation: our partnerships with our customers. Trusted by the world’s leading technology companies for 25 years, we move, store, process and secure the world’s data with semiconductor solutions designed for our customers’ current needs and future ambitions. Through a process of deep collaboration and transparency, we’re ultimately changing the way tomorrow’s enterprise, cloud, automotive, and carrier architectures transform—for the better.

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