

# Marvell Alaska 88E3015/88E3016/88E3018

Single-Port Fast Ethernet Transceivers



## PRODUCT OVERVIEW

The Marvell® Alaska® 88E3015, 88E3016, and 88E3018 are Marvell's fourth-generation DSP-based physical layer (PHY) transceivers for Fast Ethernet (FE) applications. The devices contain all the active circuitry required to convert data streams to and from a Media Access Controller (MAC) and to and from the physical media. The 88E3015, 88E3016, and 88E3018 devices incorporate IEEE 802.3u auto-negotiation, supporting both 100BASE-TX and 10BASE-T networks over twisted-pair cable in full-duplex or half-duplex mode.

The 88E3015, 88E3016, and 88E3018 all support the Reduced Gigabit Media Independent Interface (RGMI), with the 88E3015 and 88E3018 also supporting the Media Independent Interface (MII). They all feature a mode of operation supporting IEEE-compliant 100BASE-FX fiber-optic networks. Additionally, the devices implement Far-End-Fault-Indication (FEFI) in order to provide a mechanism for transferring information from the local station to the link partner that indicates that a remote fault has occurred in 100BASE-FX mode.

The Alaska 88E3015, 88E3016, and 88E3018 feature the Marvell Virtual Cable Tester® (VCT™) technology, which enables IT managers and networking equipment manufacturers to remotely analyze the quality and characteristics of the attached cable plant. Additionally, the devices use advanced mixed-signal processing and power-management techniques for extremely low power dissipation and high port count system integration.

The 88E3015, 88E3016, and 88E3018 devices can operate from a single 2.5v or 3.3v supply. They are offered in low-pin count QFN packages which reduce board space and are ideal for small form-factor applications. In addition, the 88E3016 and 88E3018 are the only single-port FE PHYs available in the industry which are pin-upgradeable to Gigabit Ethernet.

## BLOCK DIAGRAM

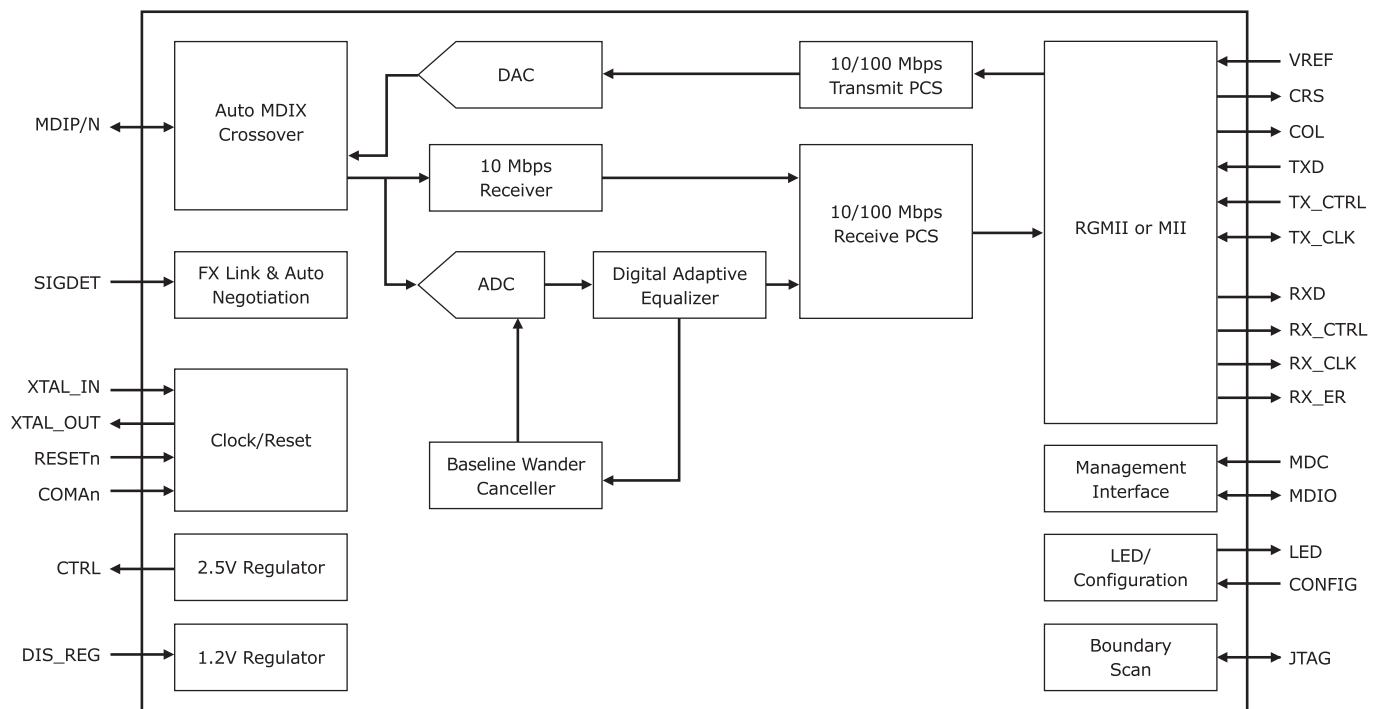


Fig 1. 88E3018 Functional Block Diagram

| ▶ FEATURES  | BENEFITS  |
|---|---|
| <ul style="list-style-type: none"> <li>• Supports RGMII interface (MII also supported in the 88E3015 and 88E3018)</li> <li>• Automatic MDI/MDIX crossover at all speeds of operation</li> </ul> | <ul style="list-style-type: none"> <li>• Reduces pin count and offers Gigabit Ethernet upgrade</li> <li>• Eases installation and reduces costs by working with both straight and cross-over cables</li> </ul> |
| <ul style="list-style-type: none"> <li>• PECL interface supporting 100BASE-FX applications</li> <li>• IEEE 802.3u compliant auto-negotiation</li> </ul>   | <ul style="list-style-type: none"> <li>• Supports FE over fiber applications</li> <li>• Automatically configures to 10 or 100 Mbps</li> </ul>   |
| <ul style="list-style-type: none"> <li>• MDC/MDIO management interface</li> <li>• Virtual Cable Tester (VCT)</li> </ul>   | <ul style="list-style-type: none"> <li>• Provides flexible management options</li> <li>• Identifies and isolates cable faults</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Coma mode support and energy detect feature</li> <li>• Supports 802.3ah unidirectional enable</li> </ul>   | <ul style="list-style-type: none"> <li>• Provides flexible power-management functionality</li> <li>• Enables the PHY transmit path even if no link is established</li> </ul>                                  |
| <ul style="list-style-type: none"> <li>• Supports three LEDs per port</li> <li>• 88E3016/88E3018: Pin-upgradeable to Marvell Gigabit Ethernet PHY</li> </ul>                                    | <ul style="list-style-type: none"> <li>• Allows for user configuration of programmable LEDs</li> <li>• Provides for future upgrade to Gigabit Ethernet with increased design flexibility</li> </ul>           |
| <ul style="list-style-type: none"> <li>• 88E3016/88E3018: Supports IEEE 1149.1 JTAG</li> </ul>  | <ul style="list-style-type: none"> <li>• Simplifies board level testing/debugging</li> </ul>  |

▶ APPLICATIONS

Despite the existence of advanced Gigabit Ethernet, 10/100 Ethernet maintains a strong presence in corporate networks, in small home networks and in various media devices. The Marvell Alaska single-port FE PHY transceivers provide connectivity solutions for a variety of applications including DVRs, game consoles, media vaults, video cameras, printers, and notebook or desktop PCs. The Alaska 88E3015, 88E3016, and 88E3018 offer low-power dissipation, enabling system manufacturers to decrease their system costs by reducing power supply requirements.

|                        | 88E3015    | 88E3016    | 88E3018    |
|------------------------|------------|------------|------------|
| Package                | 56-Pin QFN | 64-Pin QFN | 64-Pin QFN |
| Pin-Upgradeable to GbE | No         | Yes        | Yes        |
| MII                    | Yes        | No         | Yes        |
| RGMII                  | Yes        | Yes        | Yes        |
| Virtual Cable Tester®  | Yes        | Yes        | Yes        |
| Fiber Support          | Yes        | Yes        | Yes        |
| Parallel LEDs          | Yes        | Yes        | Yes        |
| Power Management       | Yes        | Yes        | Yes        |
| JTAG Support           | No         | Yes        | Yes        |

Fig 2. Device Feature Comparison

**THE MARVELL ADVANTAGE:** Marvell products come with complete reference designs which include board layout designs, software, manufacturing diagnostic tools, documentation, and other items to assist customers with product evaluation and production. Marvell’s worldwide field application engineers collaborate closely with end customers to develop and deliver new leading-edge products for quick time-to-market. Marvell utilizes world-leading semiconductor foundry and packaging services to reliably deliver high-volume and low-cost total solutions.

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