

# Marvell Alaska 88E1111

Single-Port Gigabit Ethernet Transceiver



## PRODUCT OVERVIEW

The Marvell® Alaska® 88E1111 is a physical layer device containing a single Gigabit Ethernet (GbE) transceiver. The transceiver implements the Ethernet physical layer portion of the 1000BASE-T, 100BASE-TX, and 10BASE-T standards. The device is manufactured using 0.13 micron standard digital CMOS process and contains all the active circuitry required to implement the physical layer functions to transmit and receive data on standard CAT 5 unshielded twisted pair.

Of Marvell's single-port GbE transceivers, the 88E1111 offers the most flexible Media Access Controller (MAC) interface options. The 88E1111 supports the Gigabit Media Independent Interface (GMII), the Reduced GMII (RGMII), the Serial GMII (SGMII), the Ten-Bit Interface (TBI), and the Reduced TBI (RTBI) for a direct connection to a MAC/switch port.

The 88E1111 incorporates an optional 1.25 GHz SERDES (Serializer/Deserializer). The serial interface may be connected directly to a fiber-optic transceiver for 1000BASE-T/1000BASE-X media conversion applications. By using the 88E1111, system manufacturers can enable their systems to interchangeably support both copper and fiber media. Additionally, the 88E1111 may be used to implement 1000BASE-T Gigabit Interface Converter (GBIC) or Small Form-Factor Pluggable (SFP) modules.

The 88E1111 offers the most advanced switching feature set including the Marvell Virtual Cable Tester® (VCT™) technology, used to diagnose the attached cable plant and isolate and report cable faults within one meter of accuracy.

The 88E1111 has a low power dissipation and is offered in three different package options including a 117-pin TFBGA, a 128-pin PQFP, and a 96-pin BCC featuring a body size of only 9mm×9mm. RoHS 6/6 compliant packages are available as well as industrial and commercial grades.

## BLOCK DIAGRAM

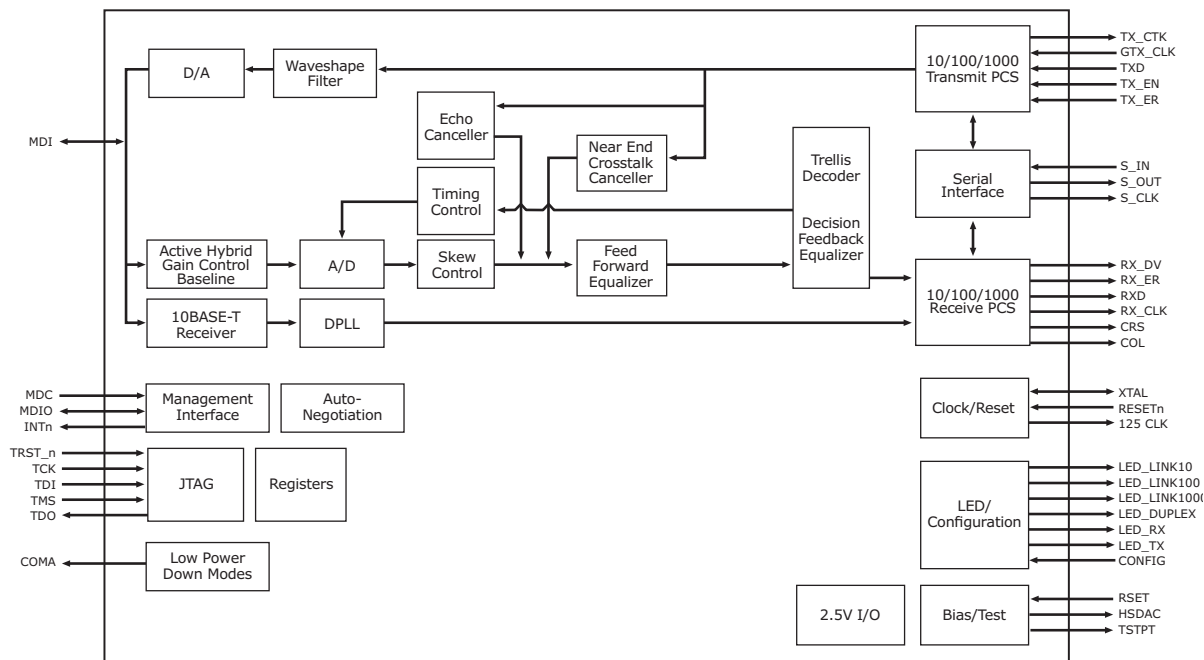


Fig 1. Alaska Single-Port GbE Transceiver (88E1111) Block Diagram

▶ FEATURES	BENEFITS
<ul style="list-style-type: none"> <li>• Low power</li> <li>• 10/100/1000BASE-T IEEE 802.3 compliant</li> <li>• Supports GMII, RGMII, SGMII, TBI, and RTBI</li> <li>• Virtual Cable Tester feature</li> <li>• Integrated 1.25 GHz SERDES</li> <li>• Media Detect feature</li> </ul>	<ul style="list-style-type: none"> <li>• Enables higher integration and reduces system cost</li> <li>• Provides compatibility with existing installed base of compliant devices</li> <li>• Compatible with any MAC/switch device</li> <li>• Identifies and isolates cable faults</li> <li>• Supports 1000BASE-X fiber applications</li> <li>• Automatically detects and configures to either copper or fiber media for complete media flexibility</li> </ul>
<ul style="list-style-type: none"> <li>• Power management modes</li> <li>• Four RGMII timing modes</li> <li>• Operation up to 180 meters on CAT 5 cable</li> <li>• Auto-MDI/MDIX crossover for all modes of operation</li> <li>• Support IEEE 1149.1 (JTAG) and NAND-tree ICT</li> <li>• IEEE 802.3u compliant Auto-Negotiation</li> <li>• Active internal hybrids for 1000BASE-T</li> <li>• Direct drive LED support</li> <li>• Software configurable LED support</li> <li>• User programmable PHY address</li> <li>• Loopback mode</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces system power</li> <li>• Eliminates the need for on-board delay lines</li> <li>• Functions over a wider base of cabling infrastructures</li> <li>• Eases installation and reduces cost</li> <li>• Simplifies board level testing and debugging</li> <li>• Automatically configures to 10, 100, or 1000 Mbps</li> <li>• Allows for lower cost magnetics</li> <li>• Eliminates cost of external LED latches and drivers</li> <li>• Enables user-defined LED configuration</li> <li>• Works with all existing GbE switch designs</li> <li>• Assists testing and diagnostics</li> </ul>

▶ APPLICATIONS

Ideal applications for the 88E1111 include SFP modules, GE-PON, GPON, cable modems, gaming devices, and network switches and routers. The multiple package options allow for increased design flexibility and the advanced diagnostic features, including Marvell VCT, allow for seamless deployment of end-user applications over standard CAT 5 cabling.

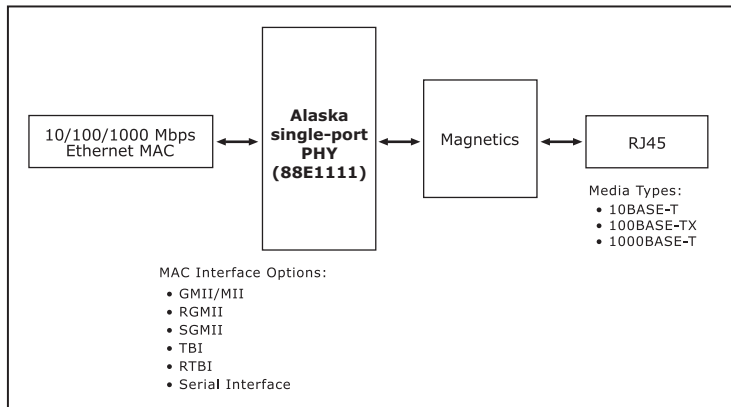


Fig 2. Alaska Single-Port GbE Transceiver (88E1111) Copper Applications Diagram

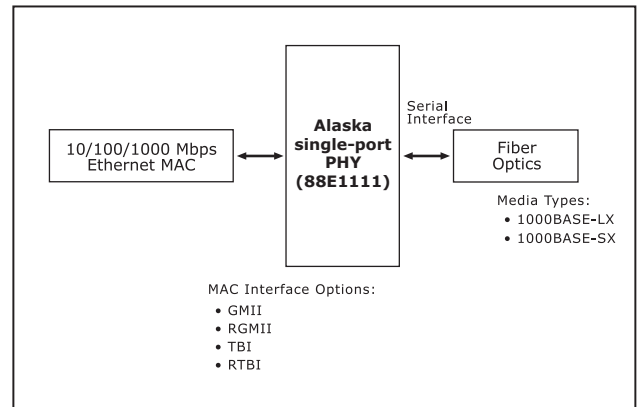


Fig 3. Alaska Single-Port Transceiver (88E1111) Fiber Applications Diagram

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Marvell Semiconductor, Inc.  
5488 Marvell Lane  
Santa Clara, CA 95054  
Phone 408.222.2500  
[www.marvell.com](http://www.marvell.com)

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