

Marvell Alaska 88E3082/88E3083

Integrated 8-Port 10/100BASE-T Fast Ethernet Transceivers



PRODUCT OVERVIEW

The Marvell® Alaska® 88E3082 and 88E3083 are third-generation Marvell DSP-based 8-port 10/100BASE-T Fast Ethernet (FE) transceivers. They offer the industry's lowest power consumption at only 150mW per port, resulting in higher port density, lower cost FE switches. Additionally, the 88E3082 and 88E3083 integrate the industry's most advanced FE transceiver feature set, such as Marvell's Virtual Cable Tester® (VCT™) technology for remote cable diagnostics and support for very low power modes.

The Alaska 88E3082 and 88E3083 contain all of the active circuitry to convert data streams to and from eight Media Access Controllers (MACs) and to and from the physical media. In addition, both devices incorporate IEEE 802.3u Auto-Negotiation in support of both 100BASE-TX and 10BASE-T networks over twisted-pair cable in full-duplex or half-duplex mode.

To reduce the number of input/output (I/O) pins between the MAC and the Physical Layer (PHY), the 88E3082 supports the Reduced Media Independent Interface (RMII), the Serial Media Independent Interface (SMII), and the source-synchronous option of SMII (SSSMII). The SSSMII interface extends the allowed PCB trace distance between the PHY and the MAC, thereby facilitating more robust, higher port density FE switch designs. The 88E3083 supports the SMII and SSSMII interfaces.

The 88E3082 also features a mode of operation supporting IEEE-compliant 100BASE-FX fiber-optic networks. The device includes a PECL interface that is selectable on a per-port basis for 100BASE-FX applications. The 88E3083 supports 100BASE-FX fiber on a single port.

BLOCK DIAGRAM

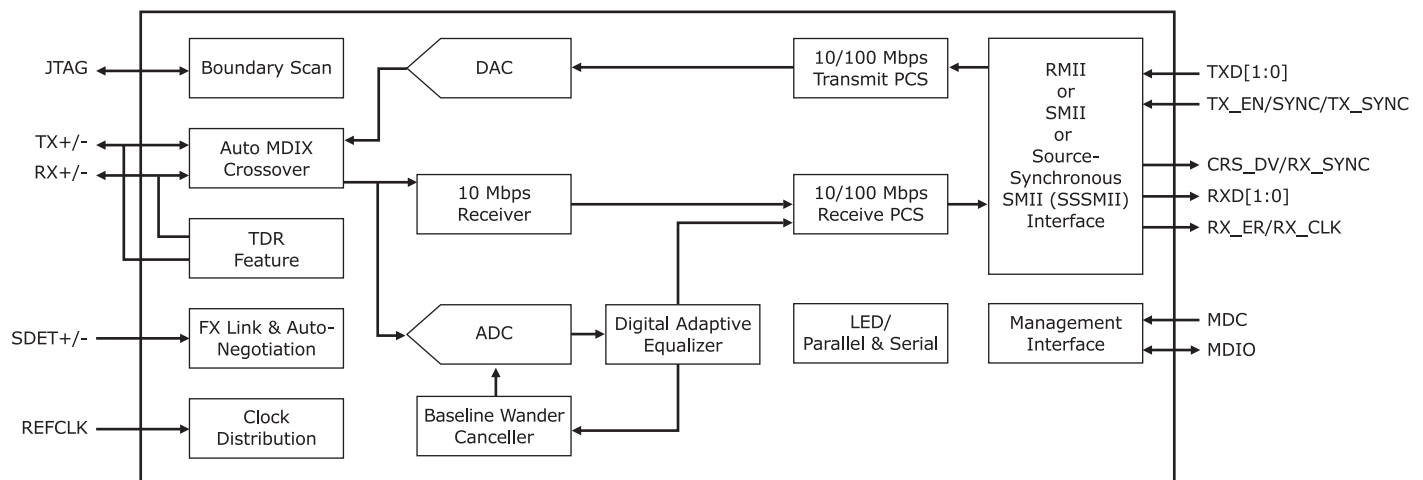


Fig 1. 88E3082 (Single-Port) Functional Block Diagram

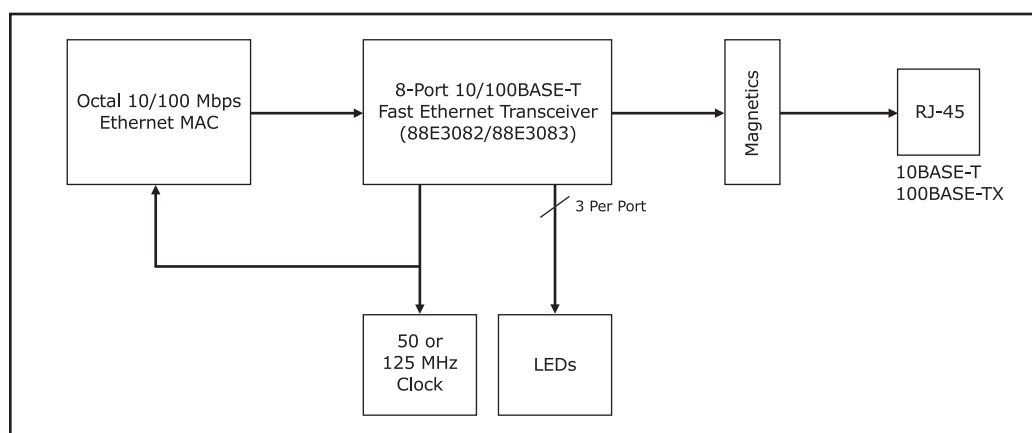


Fig 2. 88E3082/88E3083 System Diagram

| ▶ FEATURES | BENEFITS |
|---|---|
| <ul style="list-style-type: none"> • Eight independent IEEE 802.3 compliant 100BASE-TX and 10BASE-T ports | <ul style="list-style-type: none"> • Enable higher port density switch system design |
| <ul style="list-style-type: none"> • PECL interface supporting 100BASE-FX applications on a per port basis (88E3082 only; 88E3083 supports one fiber port) | <ul style="list-style-type: none"> • Supports FE over fiber applications |
| <ul style="list-style-type: none"> • RMI, SMII, and SSSMII interfaces (RMI supported on 88E3082 only) | <ul style="list-style-type: none"> • Provides user configurable digital interfaces. SSSMII option extends the distance between the PHY and SW/MAC chip on the PCB design |
| <ul style="list-style-type: none"> • Lower power dissipation, 150mW/port | <ul style="list-style-type: none"> • Yields higher port density and lower cost |
| <ul style="list-style-type: none"> • Power management modes | <ul style="list-style-type: none"> • Reduces system power |
| <ul style="list-style-type: none"> • Virtual Cable Tester feature | <ul style="list-style-type: none"> • Enables remote cable diagnostics for fault detection |
| <ul style="list-style-type: none"> • Auto-MDI/MDIX crossover for 100BASE-TX and 10BASE-T ports | <ul style="list-style-type: none"> • Simplifies and reduces the cost of networking installation |
| <ul style="list-style-type: none"> • Jumbo frame support to 10 KB with up to +/-150 ppm clock jitter | <ul style="list-style-type: none"> • Supports applications that demand larger packet sizes |
| <ul style="list-style-type: none"> • IEEE 802.3u Auto-Negotiation support for automatic speed and duplex selection | <ul style="list-style-type: none"> • Enables a plug-and-play network system |
| <ul style="list-style-type: none"> • Far-End-Fault-Indication (FEFI) support for 100BASE-FX applications | <ul style="list-style-type: none"> • Improves network reliability |
| <ul style="list-style-type: none"> • 100BASE-TX performance over 150 meters | <ul style="list-style-type: none"> • Tolerates more cable mismatch and extends the receiving distance over 150 meters on standard CAT 5 cable |
| <ul style="list-style-type: none"> • Flexible serial and parallel LED support | <ul style="list-style-type: none"> • Eliminates cost of external LED latches and drivers |
| <ul style="list-style-type: none"> • IEEE 1149.1 standard test access port and boundary scan compatible | <ul style="list-style-type: none"> • Allows for implementation of JTAG function facilitating board-level debugging |
| <ul style="list-style-type: none"> • Small outline packaging; 88E3082 in 224-pin TFBGA, 88E3083 in 128-pin LQFP | <ul style="list-style-type: none"> • Provides flexible package options for reduced PCB real estate |

▶ APPLICATIONS

The Marvell Alaska 88E3082 and 88E3083 8-port transceivers are ideal for high-port density FE routers, hubs, and switches. The ultra-low power dissipation of only 150mw per port and the Marvell VCT advanced cable diagnostics enable the most cost-effective designs.

| | 88E3082 | 88E3083 |
|----------------------|---------------|--------------|
| Package | 224-Pin TFBGA | 128-Pin LQFP |
| RMI | Yes | No |
| SMII | Yes | Yes |
| SSSMII | Yes | Yes |
| DDR-SSSMII | Yes | Yes |
| Virtual Cable Tester | Yes | Yes |
| Fiber Support | All Ports | Port 7 Only |
| Parallel LEDs | Yes | Yes |
| Serial LED Mode | Yes | No |
| Power Management | Yes | Yes |
| Industrial Grade | Yes | No |

Fig 3. 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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