**Marvell® 88E2540 Quad-Port 2.5/5GbE copper PHY**

4 ports 10/100/1000/2.5G/5GBASE-T Ethernet Transceiver with IEEE 1588v2 PTP Support

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**Overview**

The Marvell® Alaska® 88E2540 is a fully IEEE 802.3bz/NBASE-T-compliant 4-port physical layer (PHY) device that supports IEEE 802.3az Energy Efficient Ethernet (EEE). The device supports a wide variety of host-side interfaces including MP-USXGMII (Multi-port USXGMII), USXGMII, XFI, 5GBASE-R, 2.5GBASE-X, and SGMII to support full backward compatibility with lower speed legacy Ethernet rates including 1 Gbps, 100 Mbps, and 10 Mbps. MP-USXGMII decreases the number of I/O pins on the MAC interface and lowers the overall power consumption. The 88E2540 supports one MP-USXGMII interfaces (20G-QXGMII) for four ports of 5G/2.5GBASE-T.

This device family enables extremely low power across all structured wiring cable lengths, enabling dense 2.5/5G Gbps applications. The 88E2540 supports Category 5e-type cables for data rates up to 5 Gbps and distances greater than 100m.

The 88E2540 also incorporates the Marvell advanced Virtual Cable Tester® (VCT®) technology for cable fault detection and proactive cable performance monitoring. With advanced digital signal processing (DSP), the transceiver can proactively monitor the performance of a cable and determine cable length and type. It can detect opens and shorts, then report the location of a fault. The 88E2540 has integrated 1-step/2-step PTP functionality in compliance with IEEE 1588v2 and Synchronous Ethernet (SyncE) support.

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**Block Diagram**

![Block Diagram](image-url)
### Key Features

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| Media port speed    | • 4-port, 5-speed PHY, operating at 10, 100 Mbps, 1, 2.5G, or 5 Gbps data rates on UTP copper lines  
                                 • Compliant with IEEE 802.3bz/NBASE-T specifications for 5 GbE and 2.5 GbE modes |
| Host Interfaces     | • MP-USXGMII (20G), USXGMII, XFI, 5GBASE-R, 2.5GBASE-X, and SGMII system-side interfaces on all devices  
                                 • Meets 10GKR and 25GKR electrical specifications |
| Rate Matching       | • XFI with Rate matching and in-band flow control support for 5G/2.5GBASE-T data rates |
| Time stamping       | • IEEE 1588v2 timestamping (1-step and 2-step) and SyncE support |
| Energy efficient    | • IEEE 802.3az Energy Efficient Ethernet for all supported data rates |
| Management          | • I2C-compatible management interface  
                                 • MDC/MDIO management interface |
| Package             | • 14 mm X 14 mm FC-TFBGA package |

### Target Applications

- Enterprise/Campus Access mGig  
- High density mGig switches (aggregation)  
- SMB mGig connectivity