

Marvell® 88X3540 Quad-Port 10GbE copper PHY

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

Overview

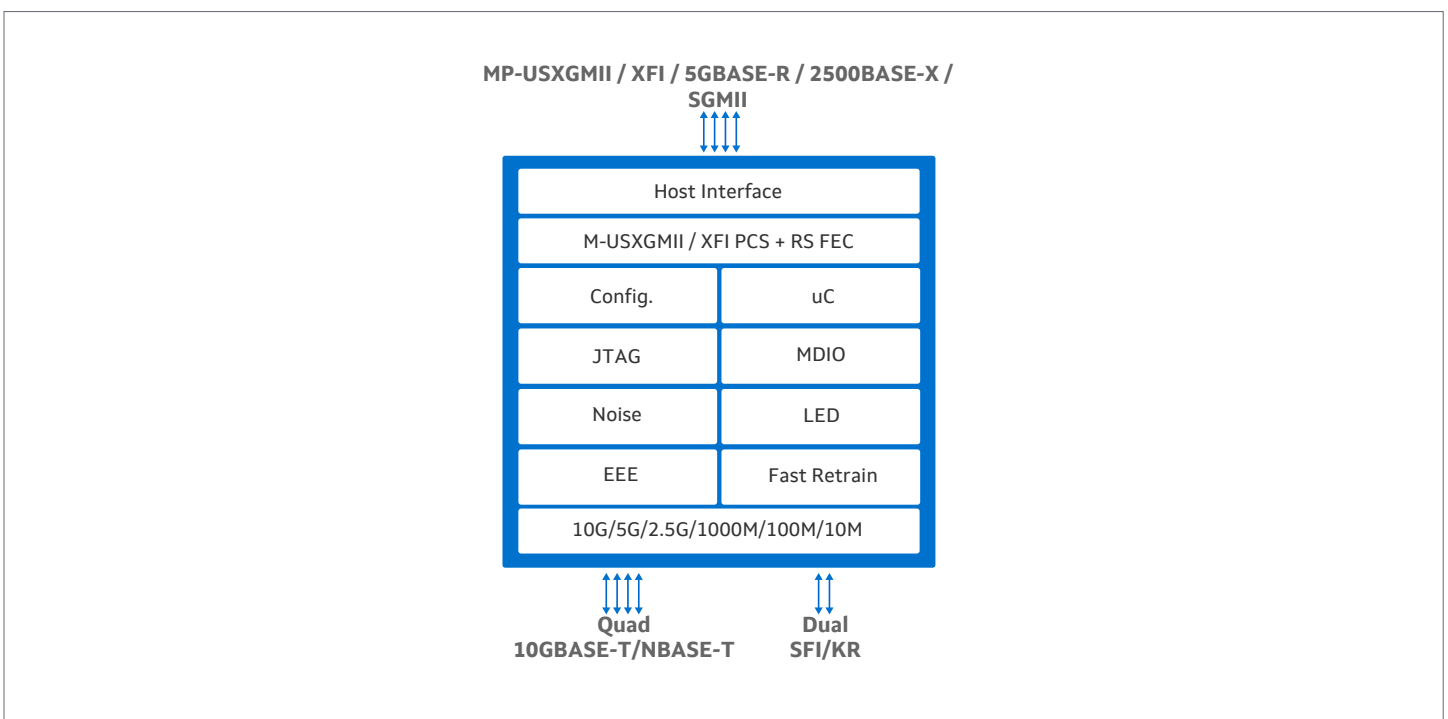
The Marvell® Alaska® 88X3540 is a fully IEEE 802.3an 10GBASE-T or IEEE 802.3bz/NBASE-T-compliant 4-port physical layer (PHY) device that supports IEEE 802.3az Energy Efficient Ethernet (EEE). The device supports a wide variety of host-side interfaces including MP-USXGMII (Multi-port USXGMII), USXGMII, 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 88X3540 supports two MP-USXGMII interfaces (20G-DXGMII) for four ports of 10GBASE-T or 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 10 Gbps

applications. The 88X3540 supports Category 6- (shielded or unshielded), Category 6A- (Augmented) and Category 7-type cables at full IEEE 802.3an range as well as Category 5e-type cables for data rates up to 5 Gbps and distances greater than 100m.

The 88X3540 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 88X3540 has integrated 1-step/2-step PTP functionality in compliance with IEEE 1588v2 and Synchronous Ethernet (SyncE) support.

Block Diagram



Key Features

Features	Benefits
Media port speed	<ul style="list-style-type: none">• 4-port, 6-speed PHY, operating at 10, 100 Mbps, 1, 2.5G, 5G, or 10 Gbps data rates on UTP copper lines• Compliant with IEEE 10GBASE-T specifications for 10G mode and IEEE 802.3bz/NBASE-T specifications for 5 GbE and 2.5 GbE modes
Host Interfaces	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• XFI with Rate matching and in-band flow control support for 5G/2.5GBASE-T data rates
Time stamping	<ul style="list-style-type: none">• IEEE 1588v2 timestamping (1-step and 2-step) and SyncE support
Energy efficient	<ul style="list-style-type: none">• IEEE 802.3az Energy Efficient Ethernet for all supported data rates
Auto Media (Dual Port mode)	<ul style="list-style-type: none">• Copper or Fiber media plug-and-play (10G only)• Automatically detect active link (copper or fiber)
Management	<ul style="list-style-type: none">• I2C-compatible management interface• MDC/MDIO management interface
Package	<ul style="list-style-type: none">• 14 mm x 14 mm FC-TFBGA package

Target Applications

- Enterprise/Campus Access mGig
- High density 10G switches (aggregation)
- SMB 10G connectivity



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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