# Marvell® Alaska® X 88X3310/40P Single or Quad 10GBASE-T/NBASE-T Ethernet Transceiver

Overview

The Marvell® Alaska® X 88X3310/40P is a new family of Ethernet transceivers that is fully IEEE 10GBASE-T standard compliant and also compliant with the NBASE-T Alliance specification for 2.5G and 5G operation over Cat5e cables. Manufactured with 28 nanometer (nm) lithography, the Marvell Alaska X 88X3310/40P enables a lower cost, low-power dissipation 1G/2.5G/5G/10Gbps Ethernet design, eliminating the need for exotic optical modules in mainstream applications. The device family uses Digital Signal Processing (DSP) technology to enable the repurposing of low-cost Ethernet cables for data rates has high as 10 Gigabits-per-second (Gbps), supplanting the use of optical technology for applications such as 802.11ac Access Point backhaul, data center switches, storage units incorporating Fibre Channel over Ethernet (FCoE) connectivity, servers and enterprise switching platforms.

Block Diagram
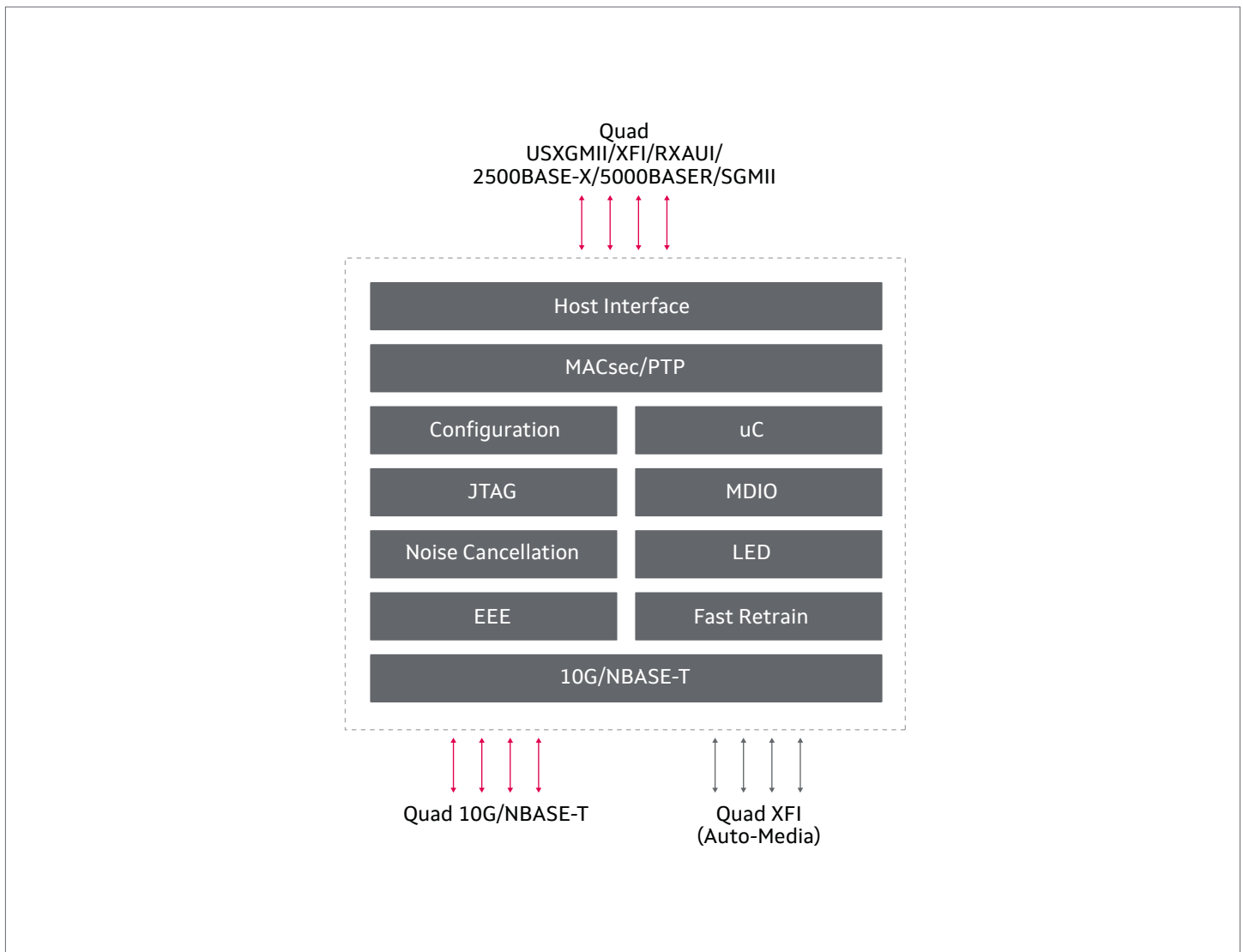
Product Description

The Marvell Alaska X 88X3310/40P is a family of fully IEEE 802.3an 10GBASE-T or NBASE-T compliant1-port (X3310P) or 4-port (X3240P) physical layer (PHY) devices that supports IEEE 802.3az Energy Efficient Ethernet (EEE). The devices support a wide variety of host-side interfaces including USXGMII, XFI, RXAUI, 2500BASE-X, 5000BASE-T, and SGMII to support full backward compatibility with lowerspeed legacy Ethernet rates including: 1Gbps, 100 Mbps and 10 Mbps. The single port X3310P alsosupports a XAUI interface.

The flexibility of this device family enables extremely low power across all structured wiringcable lengths, enabling dense 10Gbps applications. The Marvell Alaska X 88X3310/40Psupports Category 6- (screened or unscreened), 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 to5Gbps and distances up to 100m. The Marvell Alaska X 88X3310/40P enables both copper andfiber applications with its unique auto- media-detect mode. With this media plug-and-playfeature the transceiver can automatically detect whether there is a SFP+ fiber link, or if there isan active copper link partner connected to the RJ-45 (10 Gbps/5Gbps/2.5Gbps/1000Mbps/100 Mbps/10 Mbps copper

applications.) Depending on the preferred media type, the transceiver will automatically switch to the fiber or copper line-side interface without anyinvolvement from the user.

The Marvell Alaska X 88X3310/40P also incorporates the Marvell advanced Virtual Cable Tester (VCT) technology for cable fault detection and proactive cable performance monitoring. With advanceddigital signal processing (DSP) the transceiver can proactively monitor the performance of a cable anddetermine cable length and type. It can detect opens and shorts and can report the location of a fault.

The Marvell Alaska X 88X3310/40P supports the Marvell LinkCrypt® feature, which is based on the IEEE802.1ae MACsec protocol. The Marvell Alaska X 88X3310/40P devices also support features above those specified by the IEEE802.1ae MACsec protocol. These include the ability to select andfilter uncontrolled port traffic, support of packet redirection by addition of a new MAC DA, SA and Ethertype, support of latency minimization for flow control packets and support for diagnostics, MACsec header retention and additional statistics counters.

Key Benefits

- Marvell Alaska X 88X3310/40P Ethernet Transceiver is capable of 2.5G and 5G data rates over 100mCat5e cable as well as 10G data rates over 100m Cat6a cable.
- The X3310P is a single port device and the X3340P is a four port device; allowing optimal selection ofport count for each application.
- Enables low-power dissipation and lower cost design; backward compatible and interoperable withlegacy Ethernet standards.

Features

- 1-port or 4-port, Six-speed PHY. Operates at 10M, 100M, 1G, 2.5G, 5G, or 10Gbps data rates on UTP copper lines.
- Compliant with IEEE 10GBASE-T specifications for 10G mode and NBASE-T specifications for 2.5G and 5G modes.
- USXGMII, XFI, RXAUI, 2500BASE-X, 5000BASE-R, and SGMII system side interfaces on all devices.
- XAUI interface supported on single port device.
- IEEE 1588v2 times stamping and SyncE support
- MACsec function- full 802.1ae compliance supporting default cipher suite GCM-AES-128
- Integral FIFOs to absorb MACsec processing overhead; can operate in both cut-through and store-forward modes
- Complete IEEE MAC and MACsec statistics collected for all ports
- Energy Efficient Ethernet (EEE) IEEE 802.3az for all supported data rates
- Auto-media detect for copper or fiber media plug-and-play
- Allows dense multi-port 10GbE or 2.5GbE/5GbE applications
- BER better than 10-15
- Second SERDES Lane can be used for redundant XFI Link to the host or as an optical interface to the line side
- 100m reach on Cat5e for 2.5G and 5G modes. 100m reach on Cat6a for 10G mode.
- Integrated Marvell Virtual CableTester® (VCT®) technology
- MDC/MDIO management interface
- Small 10mm x 12mm BGA package for X3310 single port; 23mmx23mm BGA package for X3340 quad port

Key Features

Features	Benefits
Common Mode Sense EMI mitigation	• Allows for superior and faster EMI mitigation without the use of expensive 5th Channel magnetics
2.5G and 5G data rates over Cat5e cable	• Allows for backhauling 802.11ac Access Point data over installed base Enterprise wiring
Industry leading, lowest power consumption	• Permits higher density designs with less expensive thermal management techniques
MACsec function- full 802.1ae compliance - Supporting default cipher suite GCM-AES-128	• Protects Ethernet links from unwanted intrusion and masquerading
Super XFI host interface	• Provides KR reach, KR interoperability, and KR auto-negotiation without KR power dissipation

Target Applications

• 802.11ac Access Point backhaul

• Enterprise Switches with 2.5G/5G/10G capabilities

• Data Center 10GBASE-T Switches and Servers