Marvell® Alaska® 88E2010/40 NBASE-T Ethernet Transceivers

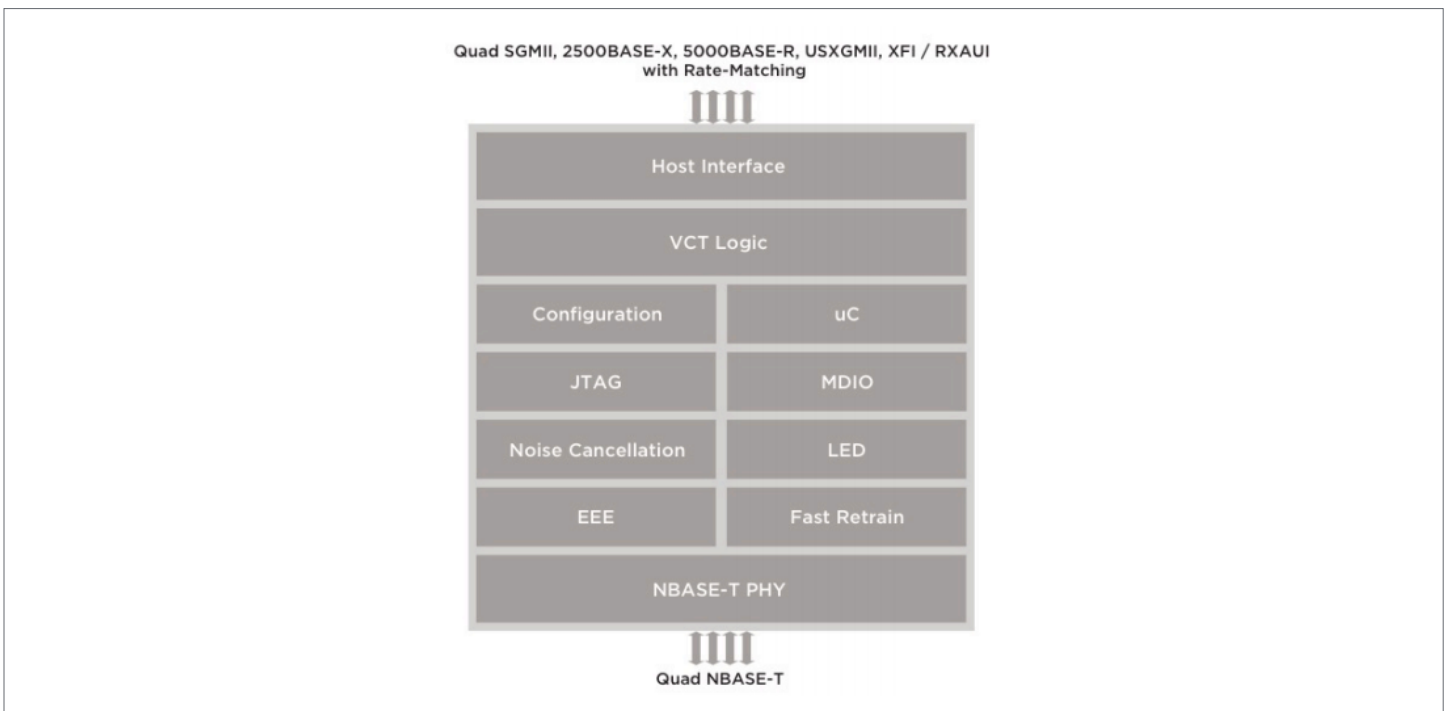Low cost, low power 1- or 4-port NBASE-T Ethernet Transceivers

Overview

The Marvell® Alaska® 88E2010/40 is a new family of Ethernet transceivers compliant with the NBASE-T Alliance specification for 2.5G and 5G data rate over Cat5e cables. Manufactured with 28nm process, the devices enable a lower cost, extremely low-power dissipation. The devices use Digital Signal Processing (DSP) technology to enable the repurposing of low-cost Cat5e Ethernet cables for data rates as high as 5Gbps, supplanting the use of optical technology for applications such as 802.11ac Access Point backhaul, Switches, Servers, Workstations and high-end PCs. The devices support Category 6 (screened or unscreened), Category 6a (Augmented) and Category 7 type cables, as well as Category 5e type cables for distances up to 100m. The devices support a variety of host interfaces (2500BASE-X, 5000BASE-R, SGMII), as well as 10G host interfaces such as USXGMII interface and XFI/RXAUI with Rate-Matching. The transceiver family also features full-backward compatibility with lower-speed legacy Ethernet (1000/100/10Mbps) on the line side.

The Marvell Alaska 88E2010/40 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) technology, the transceiver can proactively monitor the performance of a cable and determine cable length and type. It can detect opens and shorts, and report the location of a fault.

Block Diagram

Key Features

Features	Benefits
Device Family	· 88E2010: 1-port, 5-speed PHY operating at 10M, 100M, 1000M, 2.5G, 5G data rates on UTP copper lines · 88E2040: 4-port, 5-speed PHY operating at 10M, 100M, 1000M, 2.5G, 5G data rates on UTP copper lines
Ethernet Transceiver	· Compliant with NBASE-T Alliance specifications for 2.5G and 5G modes · Energy Efficient Ethernet (EEE) IEEE 802.3az for all supported data rates · BER better than 10^{-15} · 100m reach on Cat5e for 2.5G and 5G modes · Integrated Marvell Virtual Cable Tester® (VCT®) technology · MDC/MDIO management interface · Industry leading lowest power consumption
Ethernet Rate	· 5Gbps · 2.5Gbps · 1000Mps · 100Mbps · 10Mbps
Host Interface	· 2500BASE-X · 5000BASE-R · SGMII · XFI, RXAUI with rate matching · XAUI with rate matching (88E2010 only) · USXGMII
Cabling	· Category 5e · Category 6 (screened or unscreened) · Category 6a (Augmented) · Category 7
Package	· 88E2010: BGA, 10x12mm, 0.8mm ball pitch · 88E2040: BGA, 23x23mm, 1.0mm ball pitch

Target Applications

· 802.11ac Access Point backhaul
· Servers, Workstations, and high-end PCs requiring high-speed connectivity
· Enterprise Switches with 2.5G/5G capabilities

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