# Marvell® Alaska® V 88E1680

## Eight port 10/100/1000Mbps Energy Efficient Ethernet (EEE) Transceiver

## Overview

The Marvell® Alaska® V 88E1680 is a highly-integrated, ultra-low power eight-port 10/100/1000Mbps transceiver that supports Energy Efficient Ethernet (EEE) compliant to IEEE 802.3az. Alaska V 88E1680 is a new class of gigabit ethernet transceivers that incorporate innovative mixed-signal design to offer industry's highest performance, lowest power in a thermally efficient and space-saving package. In addition to supporting EEE with the new generation of MACs, 88E1680 is capable of implementing EEE with legacy or non-EEE MAC devices. This accelerates time-to-market for customers offering EEE complaint networking solutions to leverage existing hardware and software while saving development costs. In addition, 88E1680 offers unprecedented cablelength performance allowing customers to deploy across a wide-base of cabling infrastructure.

The Alaska V 88E1680 supports QSGMII (Quad-SGMII) MAC interface running at 5Gbps data-rate thus lowering pin-count, package costs, and reducing overall power consumption. This greatly complements Marvell's Prestera® DX family of high-density switches offering a highly efficient and cost-effective EEE compliant solutions.
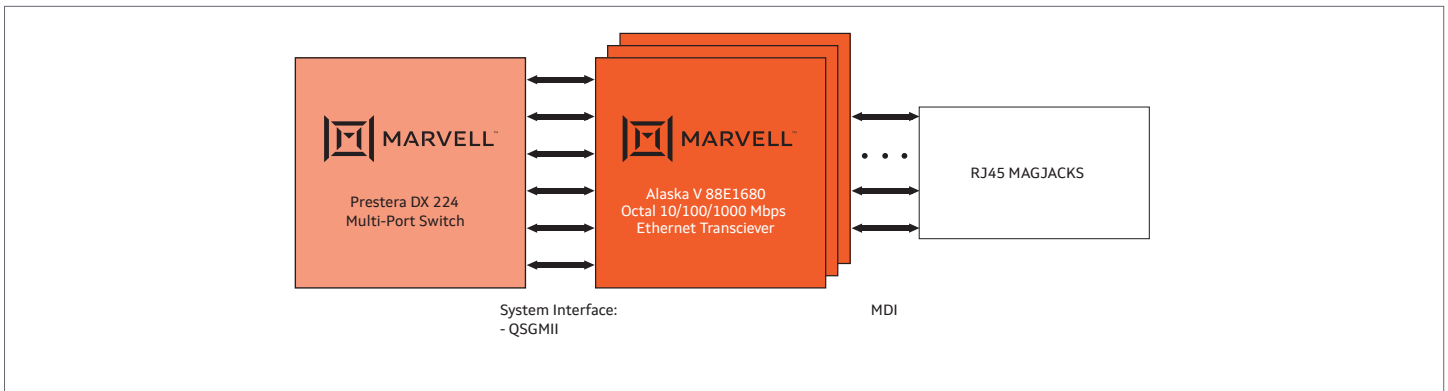
**Block Diagram**



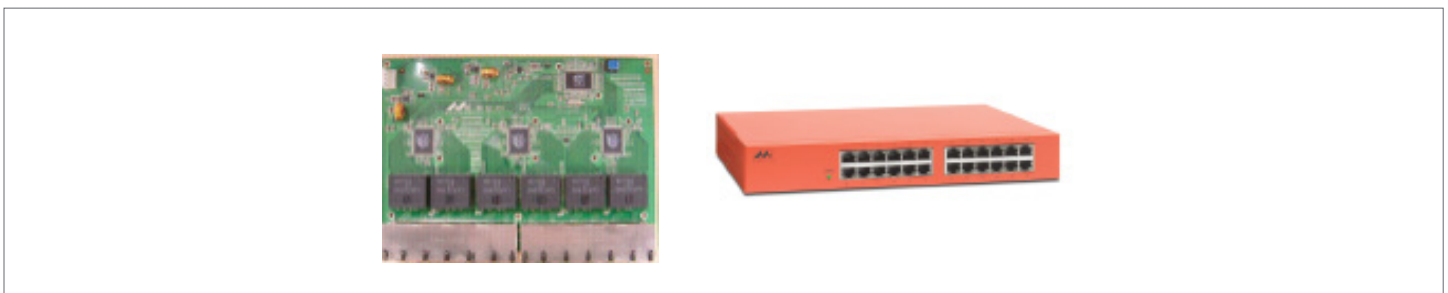Figure 1. Alaska V 88E1680 Application - High-density EEE Switch with Prestera DX Series



Figure 2. 24 Port Layer 2 Switch Solution with Alaska V 88E1680 and Prestera DX 224 Reference Design

# Key Features

| Features | Benefits |
|---|---|
| Ultra-low power: 280mW/port at 1000Mbps with full traffic | · Significant power savings on high port counts<br>– Enables fan-less and/or heat sink-less designs |
| Support EEE (IEEE 802.3az)<br>– Implements EEE with legacy or non-EEE MAC | · Over 75% energy savings during idle periods<br>– Seamless migration to EEE-based solutions with existing MACs |
| Supports QSGMII MAC interface | · Lower-pin count, Lower power<br>– Simplifies board layout |
| Synchronous Ethernet | · Accurate and low-cost clock recovery for Time-aware applications |
| IEEE 1588v2 support | · Enables highly accurate Precision Timing Protocol applications including wireless backhaul |
| Extra long cable-length performance<br>– Supports up to 170m Cat5/5e cables<br>– Fully IEEE 802.3 compliant | · Superior cable-length performance translates to improved margins across a wider base of cabling plants<br>– Enables use of low-cost magnetics lowering BOM cost |
| Advanced Virtual Cable Tester® (VCT) | · Qualitative cable-plant diagnosis<br>– Lowers Opex |
| Thermally efficient package | · Enables small-form factor designs<br>– Enables fan-less or heatsink-less designs<br>– Reduces PCB layer counts |

# Target Applications

The Alaska V 88E1680 enables a wide range of applications in spanning SMB to enterprise, metro ethernet and wireless backhaul. 88E1680 is a key component of Marvell's cloud-infrastructure solutions enabling deployment of EEE-compliant public and private cloud systems. The time-aware features offered in 88E1680 - synchronous ethernet, and IEEE1588v2 - are essential in metro ethernet, industrial ethernet and wireless backhaul.

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