

# 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 compliant 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

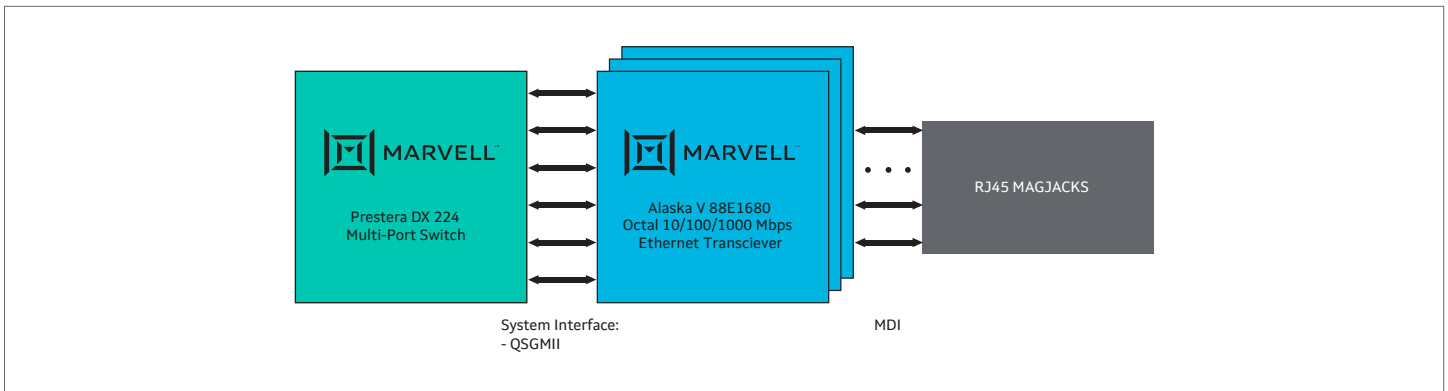


Figure 1. Alaska V 88E1680 Application - High-density EEE Switch with Prestera DX Series

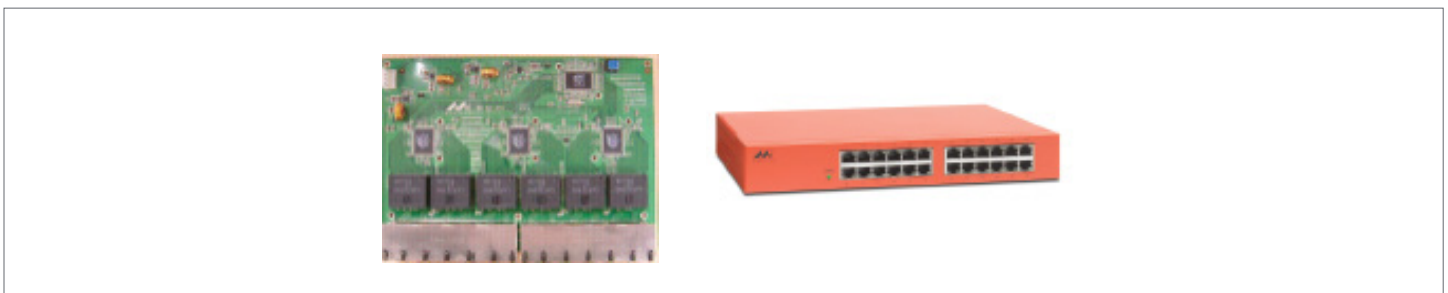


Figure 2. 24 Port Layer 2 Switch Solution with Alaska V 88E1680 and Prestera DX 224 Reference Design

## Key Features

| Features  | Benefits  |
|---|---|
| Ultra-low power: 280mW/port at 1000Mbps with full traffic   | <ul style="list-style-type: none"><li>• Significant power savings on high port counts<ul style="list-style-type: none"><li>– Enables fan-less and/or heat sink-less designs</li></ul></li></ul>   |
| Support EEE (IEEE 802.3az)<br>– Implements EEE with legacy or non-EEE MAC                                   | <ul style="list-style-type: none"><li>• Over 75% energy savings during idle periods<ul style="list-style-type: none"><li>– Seamless migration to EEE-based solutions with existing MACs</li></ul></li></ul>   |
| Supports QSGMII MAC interface   | <ul style="list-style-type: none"><li>• Lower-pin count, Lower power<ul style="list-style-type: none"><li>– Simplifies board layout</li></ul></li></ul>   |
| Synchronous Ethernet  | <ul style="list-style-type: none"><li>• Accurate and low-cost clock recovery for Time-aware applications</li></ul>  |
| IEEE 1588v2 support   | <ul style="list-style-type: none"><li>• Enables highly accurate Precision Timing Protocol applications including wireless backhaul</li></ul>  |
| Extra long cable-length performance<br>– Supports up to 170m Cat5/5e cables<br>– Fully IEEE 802.3 compliant | <ul style="list-style-type: none"><li>• Superior cable-length performance translates to improved margins across a wider base of cabling plants<ul style="list-style-type: none"><li>– Enables use of low-cost magnetics lowering BOM cost</li></ul></li></ul> |
| Advanced Virtual Cable Tester® (VCT)  | <ul style="list-style-type: none"><li>• Qualitative cable-plant diagnosis<ul style="list-style-type: none"><li>– Lowers Opex</li></ul></li></ul>  |
| Thermally efficient package   | <ul style="list-style-type: none"><li>• Enables small-form factor designs<ul style="list-style-type: none"><li>– Enables fan-less or heatsink-less designs</li><li>– Reduces PCB layer counts</li></ul></li></ul>   |

## 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.



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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