Marvell® Alaska® V 88E1680
Eight port 10/100/1000Mbps Energy Efficient Ethernet (EE) 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 cablenlength 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

<table>
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<th>Features</th>
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| Ultra-low power: 280mW/port at 1000Mbps with full traffic | • Significant power savings on high port counts  
  – Enables fan-less and/or heat sink-less designs |
| Support EEE (IEEE 802.3az)  
  – Implements EEE with legacy or non-EEE MAC | • Over 75% energy savings during idle periods  
  – Seamless migration to EEE-based solutions with existing MACs |
| Supports QSGMII MAC interface | • Lower-pin count, Lower power  
  – 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  
  – Supports up to 170m Cat5/5e cables  
  – Fully IEEE 802.3 compliant | • Superior cable-length performance translates to improved margins  
  across a wider base of cabling plants  
  – Enables use of low-cost magnetics lowering BOM cost |
| Advanced Virtual Cable Tester® (VCT) | • Qualitative cable-plant diagnosis  
  – Lowers Opex |
| Thermally efficient package | • Enables small-form factor designs  
  – Enables fan-less or heatsink-less designs  
  – 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.