

# Marvell Alaska X 88X3140/3120

Alaska X 88X3140 and 3120 Quad and Dual Port  
10GBASE-T/1000BASE-T/100BASE-TX Transceivers with Low Power,  
Low Latency and Energy Efficient Ethernet Support



## PRODUCT OVERVIEW

Marvell®'s fourth generation PHY transceivers Alaska® X 88X3140 and 3120 provide a mixed-signal solution that performs physical layer functions for 10Gbps transmission over twisted pair wiring compliant with the 10GBASE-T standard published as IEEE Std 802.3an™. The 88X3140 and 3120 also support 1000Mbps and 100Mbps speeds compliant with the IEEE Std 802.3™-2005. The 88X3140 and 3120 are based on a multi-patented and proven PHY architecture that has demonstrated best in class performance and is currently in volume production.

Key features of the 88X3140 and 3120 include a small footprint, low power consumption, support for 100m (2.5W per port) and optional 30m short reach modes. Both transceivers also support a unique interoperable data center reach mode that supports links up to 7m, with 1.9W power consumption and 1.5micro-second latency. The 88X3140 and 3120 are fully compliant with the IEEE Std 802.3an™, and also support 100BASE-TX and 1000BASE-T, with Clause 28 auto-negotiation. The transceivers interface to the host over XAUI, RXAUI or XFI interfaces, with modifications to support SGMII.

88X3140 and 3120 are an ideal solution for dual and quad port Ethernet server adapters, high density LAN switch to server, LAN switch to switch, iSCSI based IP storage and test equipment designs.

## BLOCK DIAGRAM

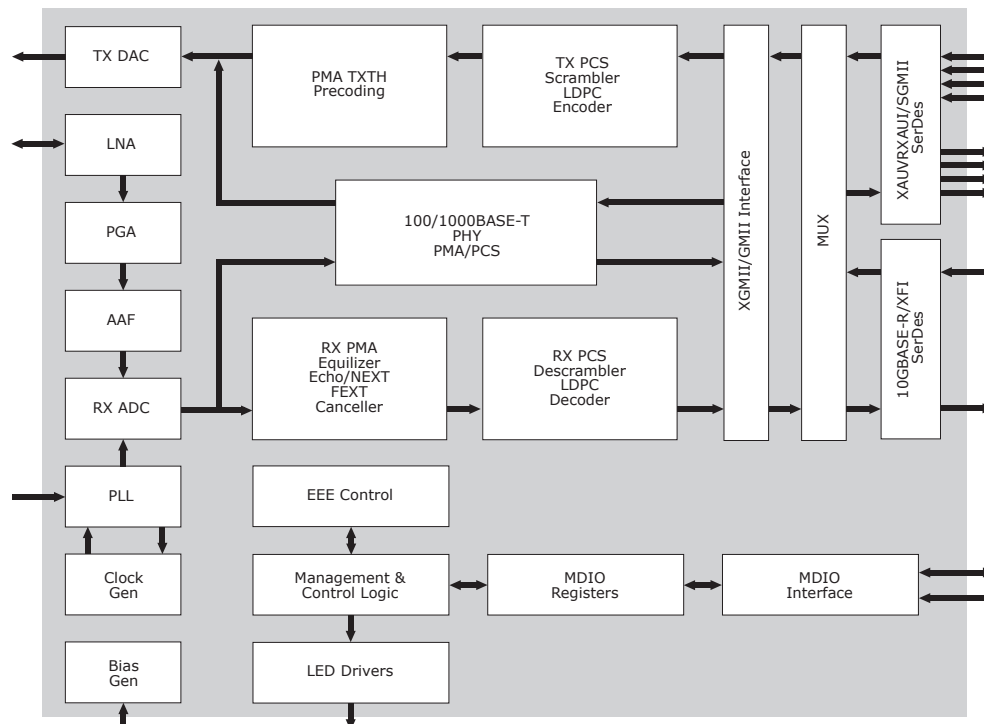


Fig 1. 88X3140 and 3120 Block Diagram (one port)

## ▶ KEY FEATURES AND BENEFITS

| FEATURES                                                                                                                                                                                                                                                                                                                                                                                                                                                | BENEFITS                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Lowest power 2.5W/port at 100 meters, 2.3W at 30 meters</li> <li>• DataCenter Mode - 1.9W/port at 7 meters, 1.5 micro-second latency</li> <li>• Dynamic Power Scaling™ (DPS) by reach</li> <li>• Automatic link detect and deep sleep power saving modes</li> <li>• 802.3az EEE (Energy Efficient Ethernet) compliant</li> <li>• Wake on LAN</li> <li>• Intelligent Power Optimization (IPO) engine</li> </ul> | <ul style="list-style-type: none"> <li>• Solution provides significant power savings both in standard run-time and through various configurable power savings techniques.</li> <li>• The implementation of latest technologies, such as EEE, allow for increased power savings in low or no use timeframes.</li> </ul> |
| <ul style="list-style-type: none"> <li>• XAUI, RXAUI, and XFI host interfaces</li> <li>• XFI reach of more over 16" of FR4</li> <li>• Advanced cable diagnostics</li> <li>• 27x27mm, 676-ball, 1mm pitch, H-FCBGA, ROHS6</li> </ul>                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>• Multiple interfaces for ease of integration</li> <li>• Provides flexibility in design</li> <li>• Allow diagnosis and repair of damaged cabling</li> <li>• Small footprint which utilizes minimal board real estate</li> </ul>                                                 |

## ▶ IEEE STANDARDS COMPLIANCE

- IEEE Std 802.3an™
- Reach
  - More than 120 meters on Category 6A & Category 7 cable\*
  - 55 to 100 meters on Category 6 cable\*
  - Up to 55 meters on Category 5e cable

*\* Under worst-case standard-compliant channel, with 4 connectors in the presence of ANEXT (injection and six around one) on Category 6/6a/7 cable*
- BER better than 10<sup>-15</sup>
- Latency < 1.5 μs (Datacenter Mode)
- Startup time less than 2 seconds
- IEEE Std 802.3an™ DSQ128 line side modulation
- IEEE Std 802.3ae™-2005 Clause 47 compliant XAUI
- IEEE Std 802.3™ Clause 28 compliant auto-negotiation
- IEEE Std 802.3ae™-2005 compliant MDIO Interface
  - 100BASE-TX/1000BASE-T Clause 22 register set support via Clause 45
  - IEEE Std 802.3ae™-2005 and IEEE Std 802.3an™-2006 Clause 45 support

**THE MARVELL ADVANTAGE:** Marvell products come with complete reference designs which include board layout designs, software, manufacturing diagnostic tools, documentation, and other items to assist customers with product evaluation and production. Marvell's worldwide field application engineers collaborate closely with end customers to develop and deliver new leading-edge products for quick time-to-market. Marvell utilizes world leading semiconductor foundry and packaging services to reliably deliver high-volume and low-cost total solutions.

**ABOUT MARVELL:** Marvell is a leader in storage, communications and consumer silicon solutions. Marvell's diverse product portfolio includes switching, transceiver, communications controller, processors, wireless, power management and storage solutions that power the entire communications infrastructure, including enterprise, metro, home, storage, and digital entertainment solutions. For more information, visit our website at [www.marvell.com](http://www.marvell.com).



Marvell Semiconductor, Inc.  
5488 Marvell Lane  
Santa Clara, CA 95054  
Phone 408.222.2500  
[www.marvell.com](http://www.marvell.com)

Copyright © 2011. Marvell International Ltd. All rights reserved. Marvell, the Marvell logo, Alaska, and Prestera are registered trademarks of Marvell. All other trademarks are the property of their respective owners.

Alaska\_X\_88X3140\_20-001 product brief 5/11