Transceiver Solutions

Alaska® X
Dual 10 Gigabit XAUI to XGMII Transceiver
Octal 3.1875 Gbps SERDES
88X2080

ALASKA® X

PRODUCT OVERVIEW

The Marvell® Alaska® X device (88X2080) is a CMOS Dual 10 Gigabit Ethernet XAUI and Octal 3.125/3.1875 Gbps SERDES device. The 88X2080 transceiver performs all of the necessary XAUI to XGMII functions for 10 Gigabit Ethernet (GbE) and 10 Gigabit Fiber Channel applications, while achieving very low power dissipation. The parallel and serial interfaces on the device are IEEE 802.3ae 10 Gigabit Media Independent Interface (XGMII) and 10 Gigabit Attachment Unit Interface (XAUI), respectively.

The Alaska X device incorporates eight lanes operating up to 3.125/3.1875 Gbps, each with a selectable 8B/10B encoder/decoder. The eight lanes can operate independently from 1.0 to 3.1875 Gbps to support a variety of backplane applications or can be configured as two 10 Gigabit XAUI channels. The device allows the use of either 62.5, 125 or 156.25/159.375 MHz reference inputs to provide flexible clocking. In addition, the device can be configured as a single XGMII to Dual XAUI device for redundancy applications. The device also supports XAUI repeater applications.

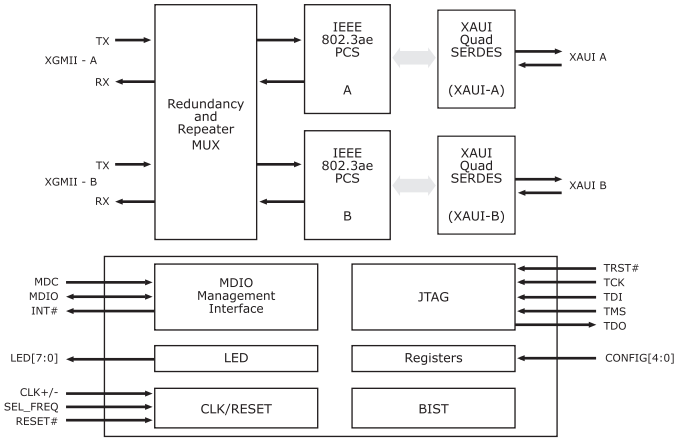

Fig 1. Alaska X 10 Gigabit Transceiver (88X2080) Block Diagram: XAUI Modes

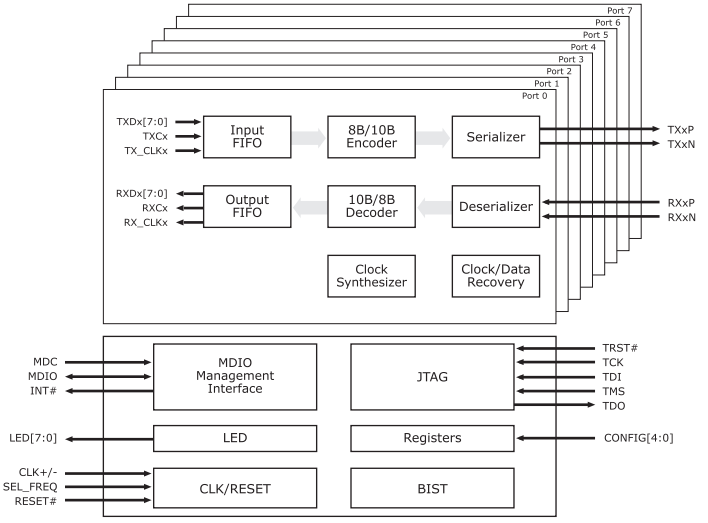

Fig 2. Alaska X 10 Gigabit Transceiver (88X2080) Block Diagram: Backplane Modes

FEATURES

- IEEE 802.3ae XGMII parallel interface
- IEEE 802.3ae XAUI serial interface
- 1.0 to 3.1875 Gbps data rates
- Selectable 62.5/125/156.25/159.375 MHz reference frequencies
- Selectable 8B/10B encoder/decoder
- Independent clock generator and CDR per channel
- Programmable pre-emphasis
- On-chip serial terminations (50 ohms)
- Low power dissipation: 2.4W; Redundancy mode: 2.0W
- 1.5V or 1.8V XGMII HSTL input/output (I/O)
- IEEE 802.3ae MDIO interface

BENEFITS

- IEEE compliant interfaces ensure interoperability
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- Backward compatibility for backplane applications
- Provides timing flexibility
- Enables proprietary coding
- Provides robust performance
- Operation over long PCB traces and copper cable
- Allow for fewer external components
- Lowers overall system power
- Provides interface flexibility
- Eases programmability

MARVELL®

Alaska® X Dual 10 Gigabit XAUI to XGMII Transceiver

MOVING FORWARD FASTER®

FEATURES

- IEEE 1149.1 JTAG test interface
- Small 448-pin PBGA package (23 mm x 23 mm)
- 0.15-micron CMOS process

BENEFITS

- Superior manufacturability
- Occupies less board space
- State-of-the-art production process

APPLICATIONS

The Marvell Alaska X transceiver operates as the XAUI to XGMII converter between the optical modules and switch devices in 10 GbE and 10 Gigabit Fiber Channel applications. The device connects to optical modules such as XENPAK/XPAK MSA modules using the XAUI interfaces and to the switch devices using the XGMII interfaces.

The Alaska X device features powerful amplitude and pre-emphasis controls, which allow the device to be used as a highly robust backplane SERDES. The device can operate over 60 inches of generic backplane PCB traces with multiple connectors making it ideal for chassis-based switching systems.

The 88X2080 product is also well-suited for 10 Gigabit copper connections such as interconnect links between stackable switching systems, uplink connections and chassis-to-chassis connections. The Alaska X transceiver allows 10 Gigabit operation over standard copper cables such as 15 meters of standard InfiniBand™ 8-pair cable.

The 88X2080 device is ideally suited for the following applications:

1. Dual 10 GbE/10 Gigabit Fiber Channel links: Dual XGMII to Dual XAUI mode
2. Redundant 10 GbE/10 Gigabit Fiber Channel links: Single XGMII to Dual XAUI mode
3. XAUI retimer/repeater: XAUI to XAUI repeater mode
4. Backplanes: Octal SERDES modes

The 88X2080 device seamlessly interfaces with the following:

1. XENPAK/XPAK/X2 optical modules
2. Copper cable
3. PCB traces
4. Parallel optics

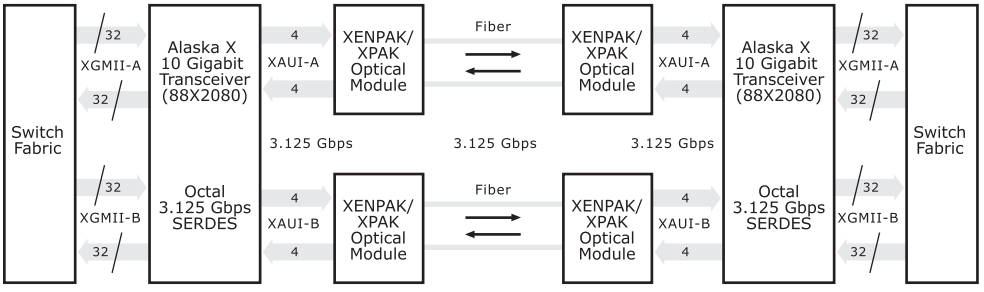

Fig 3. Alaska X 10 Gigabit Transceiver (88X2080) Applications Diagram

THE MARVELL ADVANTAGE: The Marvell Alaska X Dual 10 Gigabit XAUI to XGMII transceiver comes with a complete set of hardware and software development tools to assist network hardware engineers with product evaluation. Marvell's worldwide field applications engineers collaborate closely with network equipment vendors to develop and deliver new competitive products to market on time. Marvell utilizes recognized world-leading semiconductor foundry and packaging services to reliably deliver high-volume and low cost total solutions.

For more information, visit our website at www.marvell.com.

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