



### PRODUCT OVERVIEW

The Marvell® Alaska® X devices (88X2010 and 88X2011) are CMOS 10 Gigabit Ethernet (GbE) serial interface transceivers. The 88X2010 transceiver provides dedicated 10 GbE and 10 Gigabit Fibre Channel (GFC) LAN PHY serial operation. The 88X2011 device incorporates WAN Interface Sublayer (WIS) functionality and can be used for LAN and WAN PHY applications. WIS functionality enables the transmission of Ethernet data over SONET networks. These transceivers perform all of the necessary serial 10 Gbps to XAUI conversion functions, while achieving a very low power dissipation of 1.4 Watts. The parallel and serial interfaces on the device are IEEE 802.3ae 10 Gigabit Attachment Unit Interface (XAUI) and PMA serial interface (XFI compliant), respectively.

The Alaska X devices incorporate serial 10 Gbps and XAUI Serializer/Deserializer (SERDES) with on-chip clock generation and recovery. In addition, the devices feature IEEE 802.3ae compliant PCS, PMA, WIS, and XGXS functionality. Both the 88X2010 and 88X2011 devices support industry standard management interface through their MDIO ports. The devices' small form factor and low power consumption make them ideal for XENPAK, XPAK and X2 fiber optic modules. The 88X2010 and 88X2011 devices are also suitable for XFP module-based applications.

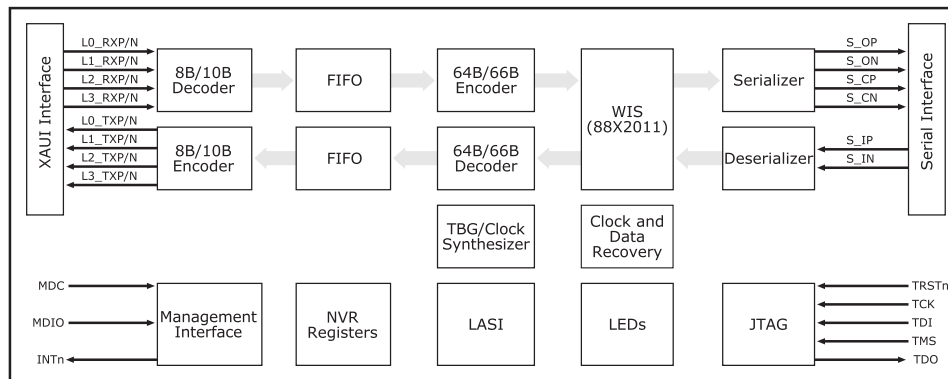


Fig 1. Alaska X 10 Gigabit Transceiver (88W2010/88X2011) Block Diagram

### FEATURES

- Selectable WAN interface sublayer (88X2011)
- IEEE 802.3ae XAUI parallel interface
- XFI compliant serial 10 G interface
- 10.3125 to 10.51875 Gbps data rates (LAN PHY)
- 9.953 Gbps data rate (WAN PHY—88X2011 only)
- On-chip clock generation and clock recovery
- On-chip 64B/66B encoder/decoder
- Internal CJPAT, CRPAT and PRBS test pattern generators
- Low power dissipation: 1.4 Watts
- IEEE 802.3ae MDIO interface
- IEEE 1149.1 JTAG test interface
- Small 256-pin TFBGA package (17mm x 17mm)
- 0.13-micron CMOS process

### BENEFITS

- WAN or LAN configurable operation
- IEEE compliant interface ensures interoperability
- Serial 10 G module MSA interoperability
- Supports 10 GbE and 10 GFC
- Supports SONET and SDH transmission
- Simplifies system timing requirements
- Provides standards compliant coding
- Assists in testing and diagnostics
- Lowers overall system power
- Eases programmability
- Allows for superior manufacturability
- Occupies less board space
- State-of-the-art production process





## APPLICATIONS

The Marvell Alaska X transceiver operates as the serial to XAUI converter between opto-electronic components and the XAUI PCB interface in 10 GbE and 10 GFC in XENPAK, XPAK and X2 optical modules. The device also connects to serial interface optical modules using a XFI interface and to the switch devices using a XAUI to XGMII interface components such as the 88X2040 device. The 88X2010 and 88X2011 devices also include a Link Alarm Status Interrupt (LASI) to simplify diagnostics for multi-source agreement (MSA) requirements in 10 GbE optical modules.

The 88X2011 transceiver WIS includes:

- Payload mapping
- Path, line and section overhead (A1, A2 Framing)
- B1, B2 and B3 generation and checking
- Scrambling and descrambling

The device is also well-suited for use with discrete optics and physical media semiconductor devices. Manufacturers can optimize fiber optic connections to achieve lower cost or optimize the optics for the application.

The 88X2010/88X2011 devices are ideally suited for the following applications:

1. 10 GbE LAN PHY: XAUI to 10.3125 Gbps serial interface
2. 10 GbE WAN PHY: XAUI to 9.953 Gbps serial interface (88X2011 only)
3. 10 GFC: XAUI to 10.51875 Gbps serial interface

The 88X2010/88X2011 devices seamlessly interface with the following:

1. XFP optical modules
2. Laser diode drivers/electro-absorption modulator drivers
3. Transimpedance amplifiers
4. Transmitter and receiver optical sub-assemblies

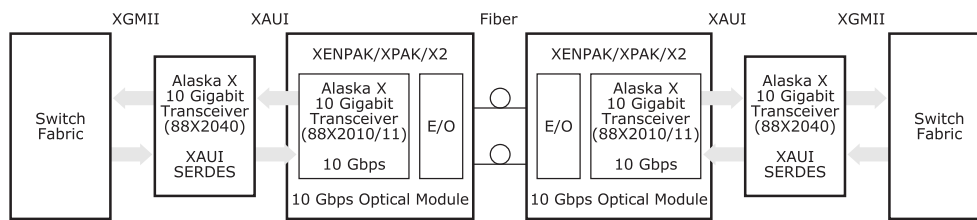


Fig 2. Alaska X 10 Gigabit Transceiver (88X2010/88X2011) Applications Diagram

**THE MARVELL ADVANTAGE:** The Marvell Alaska X 10 GbE and 10 GFC LAN/WAN transceivers come 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](http://www.marvell.com).



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