PRODUCT OVERVIEW

The Marvell® Alaska® X device (88X2012) is a CMOS 10 Gigabit serial interface transceiver. The 88X2012 transceiver provides dedicated 10 Gigabit Ethernet (GbE) and 10 Gigabit Fibre Channel (GFC) LAN PHY serial operation. This transceiver performs all of the necessary serial to XGMII functions, while achieving a very low power dissipation of 1.0 Watt. The parallel and serial interfaces on the device are IEEE 802.3ae 10 Gigabit Media Independent Interface (XGMII) and PMA serial interface (XFI compliant), respectively.

The Alaska X device incorporates on-chip clock generation and recovery. The parallel interface is implemented with XGMII HSTL I/O. The 88X2012 device eliminates the XAUI interface thereby improving power consumption and data latency. The device supports industry standard management interface through its MDIO port. The high-speed serial interface allows direct interface with XFP MSA serial fiber optic modules, or can be directly interfaced with optical drivers and receivers.
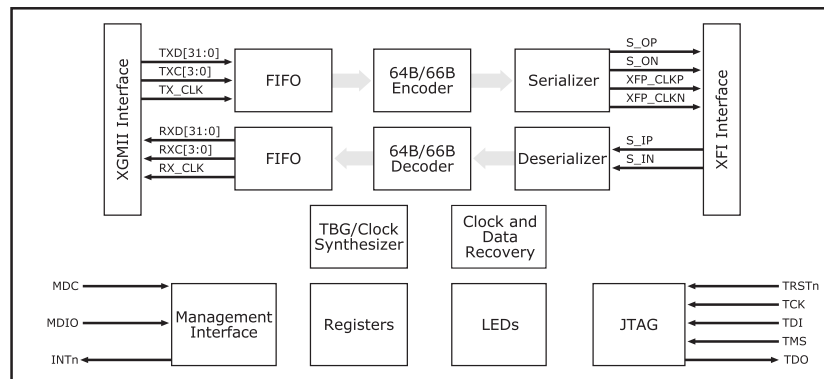

Fig 1. Alaska X 10 Gigabit Transceiver (88X2012) Block Diagram

FEATURES

- IEEE 802.3ae XGMII parallel interface
- XFI compliant serial 10 G interface
- 10.3125 to 10.51875 Gbps data rates
- On-chip clock generation and clock recovery
- On-chip 64B/66B encoder/decoder
- Internal CRPAT, CJPAT and PRBS test pattern generator
- Independent clock generator and CDR per channel
- On-chip serial terminations (50 ohms)
- Low power dissipation: 1.0 Watt
- 1.5V or 1.8V XGMII HSTL I/O
- 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

- IEEE compliant interface ensures interoperability
- XFP MSA interoperability
- Supports 10 GbE and 10 GFC
- Simplifies system timing requirements
- Provides standards compliant coding
- Assists testing and diagnostics
- Provides robust performance
- Allow for fewer external components
- Lowers overall system power
- Provides interface flexibility
- Eases programmability
- Allows for superior manufacturability
- Occupies less board space
- State-of-the-art production process

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APPLICATIONS

The Marvell Alaska X transceiver operates as the XFI to XGMII converter between XFP MSA optical modules and switch devices in 10 GbE and 10 GFC applications. The device connects to serial interface optical modules using the XFI interface and to the switch devices using the XGMII interface.

The Alaska X supports a simplified architecture for 10 GbE and 10 GFC applications using an XFP MSA or similar serial optical module. Serial data is converted directly to XGMII format without using unnecessary interfaces and coding, such as XSBI and XAUI/XGXS. This results in a low power solution with minimal latency.

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 88X2012 device is ideally suited for the following applications:

1. 10 GbE links: XGMII to 10.3125 Gbps serial interface
2. 10 GFC: XGMII to 10.51875 Gbps serial interface
3. 10 Gigabit performance monitor: receive only

The 88X2012 product seamlessly interfaces with the following:

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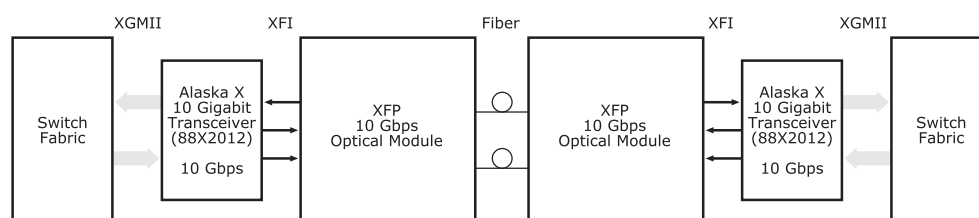4. Transmitter and receiver optical sub-assemblies

Fig 2. Alaska X 10 Gigabit Transceiver (88X2012) Applications Diagram

THE MARVELL ADVANTAGE: The Marvell Alaska X 10 Gigabit serial 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.