



Marvell Alaska C 88X5111

Integrated 100 Gbps Ethernet Gearbox with Copper Cable and Backplane Drive Capability

PRODUCT OVERVIEW

The Marvell® Alaska C 88X5111 is a fully integrated single chip port Ethernet transceiver that performs all physical layer functions required for 100 Gbps Ethernet Gearbox functionality, and drive 100 Gbps full duplex transmission, over a variety of media including optics, backplanes and passive copper cables. Manufactured with 28 nanometer lithography, in a 17mmx17mm package footprint, the Marvell 88X5111 enables low-power dissipation, high-density 100GbE card designs. The line interface of the 88X5111 is fully compliant to the IEEE 802.3BJ standard that defines the physical layer specifications for 100 Gbps Ethernet transmission over backplanes and copper cables. The device supports the Reed Solomon Forward Error Correction (RS-FEC) function required for 100G-CR4, 100G-KR4, and 100G-SR4 operation, as well as auto-negotiation and coefficient-training protocol required by the IEEE 802.3. The device also supports the Multilink Gearbox (MLG) functionality specified by the OIF MLG 2.0 specifications. The MLG functionality enables aggregation of 10 independent streams of 10 Gbps Ethernet or two independent streams of 40 Gbps Ethernet onto a 4x25 Gbps stream. The 88X5111 connects to a MAC or switch on its host interface over a 10x10 Gbps CAUI-10 link. The transmit drive and receiver equalization capabilities of the host interface meet the requirements of 10GBase-KR specifications, significantly exceeding CAUI-10 requirements.

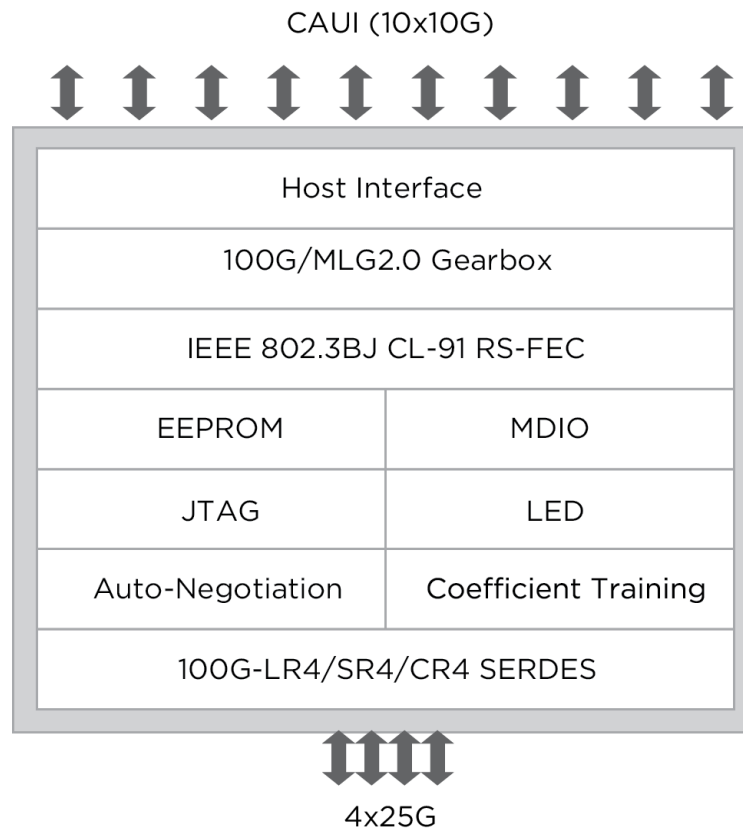
On the line side, the device has a 4x25 Gbps interface and supports a variety of media types including single mode and multimode optical modules, passive and active copper direct attach cables, and copper backplanes. The line interface of the 88X5111 is fully compliant to the IEEE 802.3BJ standard that defines the physical layer specifications for 100 Gbps operation over backplanes and copper cables. The device supports the RS-FEC feature, as well as auto-negotiation and coefficient training protocol required by the 802.3BJ. Standard Internal registers can be accessed via an MDIO/MDC serial management interface which is compliant with the IEEE 802.3 specification (Clause 45). An MDC frequency of up to 25 MHz supported. The device includes internal PRBS generators and Ethernet packet generators and loopbacks to assist with test and debug. In addition, non-destructive eye monitoring is supported on all high speed I/Os. The 88X5111 is housed in a 17 mm x 17mm 256 pin FCBGA package, and supports an operating temperature range from 0 to 105°C.

FEATURES

KEY FEATURES	
<ul style="list-style-type: none">• Single port 100GbE Gearbox• Multilink Gearbox (MLG) compliant to OIF MLG 2.0 specifications• Line interface SERDES that exceeds the equalization requirements for 100G-CR4 passive copper cables and 100G-KR4 backplanes• Long reach host interface SERDES that exceeds IEEE CAUI requirements• Fully autonomous adaptive equalization on line and host receiver• Support for auto-negotiation and transmitter coefficient training protocol	<ul style="list-style-type: none">• Support for IEEE 802.3BJ Reed- Solomon Forward Error Correction (R-S FEC) functionality required for driving 100G-CR4 passive copper cables, 100G-KR4 backplanes and 100G-SR4 MMF modules• Recovered clock outputs for SyncE applications• Ethernet packet and programmable packet generation and checking capabilities• Hardware interrupt pins for per port hardware interrupt generation capability• Non-destructive Eye monitoring capability on all high speed lanes• Clause 45 MDC/MDIO management interface• Junction temperature range of 0 to 105°• Small 17mm x 17mm FCBGA package

SPECIAL FEATURES AND BENEFITS

SPECIAL FEATURES	BENEFITS
<ul style="list-style-type: none"> Long reach line SERDES 	<ul style="list-style-type: none"> Capable of compensating an IL of up to 30dB without FEC
<ul style="list-style-type: none"> Integrated Reed-Solomon FEC 	<ul style="list-style-type: none"> Capable of driving 100G-CR4 cables, 100G-KR4 backplanes and 100GSR4 optical modules
<ul style="list-style-type: none"> MLG 2.0 Gearboxing functionality 	<ul style="list-style-type: none"> Enables aggregation of 10 independent 10GbE streams or 2 independent 40GbE streams to a 4x25G pipe
<ul style="list-style-type: none"> Integrated IEEE auto-negotiation and training protocol 	<ul style="list-style-type: none"> Seamless interoperability with IEEE-compliant devices from other vendors
<ul style="list-style-type: none"> Fully autonomous equalizer adaptation 	<ul style="list-style-type: none"> Fully autonomous equalizer adaptation



APPLICATIONS

- 100GbE Data center switches
- 100G-KR4 backplanes
- 10GbE/40GbE port expanders

THE MARVELL ADVANTAGE: Marvell chipsets come with complete reference designs that 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, processor, 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 Web site at www.marvell.com.



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