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10GbE PCS

Overview

The 10 Gigabit Ethernet (10 GbE) Physical Coding Sublayer (PCS) solution from Lattice Semiconductor enables creation of system solutions for applications using 10 Gigabit Ethernet as defined by IEEE 802.3ae. This IP solution includes soft IP that is targeted to the programmable array section of the ORCA® ORLI10G FPSC. The ORLI10G contains a 10 Gbits/s Transmit and Receive Line Interface, and when combined with this PCS core, enables flexible10GbE LAN/WAN application solutions.

The 10 GbE PCS IP solution includes a 10GbE scrambler/descrambler, 10 GbE Media Independent Interface (XGMII) and 64b/66b encoder/decoder functions. These functions are implemented in software to provide flexibility while the specifications for these interface functions are being finalized. This IP interfaces with the high-speed line interface block embedded in the ORLI10G which implements an OIF standard (OIF 99.102.5) 10Gb 16-bit Interface (XSBI).

The PCS IP is provided in ORCA bitstream format to allow direct downloading and turnkey functionality. Simulation models, test benches and documentation are also provided to support customers in integrating the functions for 10 GbE LAN/WAN applications.
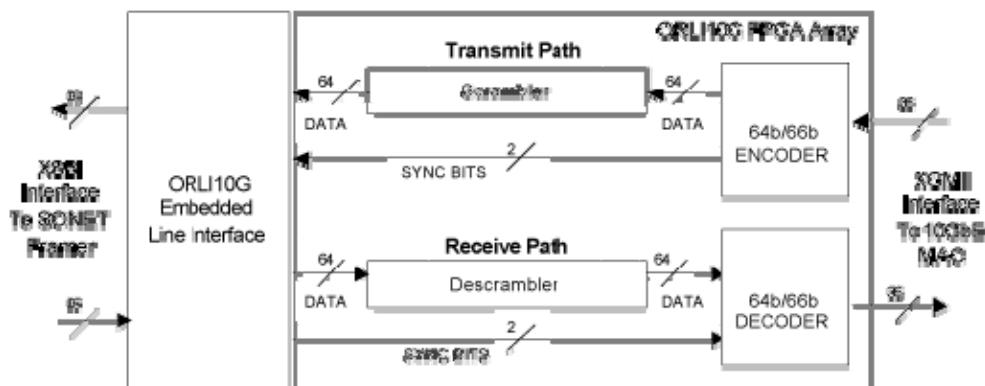
Features

Complete 10Gb Ethernet Physical Coding Sublayer (PCS) Solution Based on the ORCA 10 Gbits/s Line Interface (ORLI10G) FPSC, Enabling Flexible10GbE LAN/WAN Application Solutions.

IP Targeted to the ORLI10G Programmable Array Section Implements Functionality Conforming to IEEE Standard 802.3ae, Including:

- 10 GbE Media Independent Interface (XGMII) for Interfacing with 10Gb Ethernet MACs.
- Elastic Store Buffers for Clock Domain Transfer to/from the XGMII Interface.
- X58 + X39 + 1 Polynomial 10GbE Scrambler/ Descrambler Blocks.
- Receive Direction 64b-to-66b Gearbox, 66-bit Word Aligner and 64b/66b Decoder.
- Transmit Direction 64b/66b Encoder and 66b-to-64b Gearbox.
- Interface with the High-speed Line Interface Block Embedded in the ORLI10G which Implements an OIF Standard (OIF 99.102.5) 10Gb 16-bit Interface (XSBI).

ORCA Bitstream Format Allows Direct Downloading and Turnkey Functionality.

ModelSim Simulation Models and Test Benches Available for Free Evaluation.

Evaluation Configuration

Evaluation Configuration Table

Bitstream File	Device	Speed Grade	ORCA4 PFUs/LUTs	fMAX (MHz)
10gbe_pcs_o4_1_001	ORLI10G	-2	Bitstream fills device	XGMII 156.25 MHz

Ordering Information

Part Numbers:

For ORCA 4: 10GBE-PCS-O4-B1

To find out how to purchase the 10GbE PCS IP Core, please contact your **local Lattice Sales Office**.