

Virtex-5 LXT

For High-Performance Applications



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Built on the revolutionary ExpressFabric™ architecture, the Xilinx Virtex-5 family is the ultimate system integration platform. With the industry's highest performance, ultimate connectivity, optimized power, and lowest system cost, you can design next-generation systems for wired/wireless networking, audio/video, storage/server and other markets with maximum productivity.

The latest platform Virtex-5LXT offers all the advantages of Virtex-5LX but optimized for high-performance logic with serial I/O applications.

Key Features

All the features V5LX plus:

- **RocketIO GTP Transceivers:**
100 Mbps-3.2 Gbps Implement serial protocols at lowest power
 - Flexible SERDES supports multi-rate applications
 - Designed to work with integrated PCIe and EMAC blocks
 - 77% lower power consumption: <100 mW at 3.2 Gbps
- **PCI Express Endpoint Block:**
1/2/4/8-lane Built-in support for ubiquitous serial connectivity standard
 - PCI SIG-verified compliance (on integrators list)
 - Capable of delivering full PCIe endpoint functionality when used with RocketIO GTP transceivers
 - Built-in hard IP frees user logic resources and reduces power
- **Ethernet Media Access Controller:**
10/100/1000 Mbps Connect to the Internet via an integrated tri-mode EMAC
 - UNH-verified compliance
 - Built-in hard IP frees user logic resources and reduces power
 - Four Ethernet MAC blocks on every Virtex-5 LXT device



Key Applications

- **Features for Backplane Design:**
 - Multi-Rate support (100Mbps – 3.2Gbps)
 - Programmable termination (reduces signal reflections and simplifies board design)
 - Programmable voltage swing (reduces power consumption)
 - Transmit pre-emphasis (equalizes simple channels)
 - Integrated AC coupling (enables direct interface to other devices and reduces component count)
 - Linear receive equalization (equalizes difficult channels and upgrades legacy backplanes)
- **Features for Line Card Design**
 - Multi-Rate support (100Mbps – 3.2Gbps)
 - FPGA fabric (enables integration of processing components and enables customization)
 - Programmable PCS (enables support for multiple protocols in a single line card)
 - x16 and x20 support (SONET traffic)
- **Features for Switching System Design**
 - Multi-Rate support (100Mbps – 3.2Gbps)
 - Up to 24 RocketIO multi-gigabit transceivers (enables multiple port-count density points)
 - Transmit pre-emphasis (equalizes simple backplane channels)
 - Receive equalization (equalizes difficult channels and enables upgrades of legacy backplanes)
- **Features for Server and Storage Systems**
 - Multi-Rate support (100Mbps – 3.2Gbps and enables support for multiple traffic speeds in a single line card)

- Electrical Idle
- Dynamic reconfiguration port (enables on-the-fly updates of PMA and PCS settings)
- Beacons (enables remote power-on for SAS and SATA)

Key Design Tips

- **Lowest-power serial connectivity**
The completely new RocketIO GTP transceiver design consumes less than 100 mW at 3.2Gbps, the lowest power in the industry and a 77% reduction compared to Virtex-4 FPGAs.
- **Ease of design**
The RocketIO GTP wizard simplifies configuration with time-saving, menu-driven configuration for PCIe, XAUI, OC-48, GE interfaces. The tool produces a wrapper, an example design, and a test bench for rapid integration and verification of the serial interface with your custom function. A wide range of settings for Tx and Rx equalization enable you to tune transceivers for reliable operation on the toughest channels. Built-in PRBS generators and checkers simplify characterization and debug. You can rapidly zero-in on the right setting to achieve maximum design margin. These functions work with industry-standard test equipment as well as Xilinx IBERT tool which provide low-cost, easy-to-use diagnostic capabilities.
- **Standards support**
RocketIO GTP transceivers support all popular serial interface standards. Xilinx also offers protocol-specific design kits to help ease your design solutions.