Intel® IXF18104

10 Gigabit LAN PHY

Product Overview

The Intel® IXF18104 is a highly integrated solution for 10GbE Local Area Network (LAN) port applications compliant as per IEEE802.3ae specifications. The IXF18104 supports the 10GbE LAN mode of operation for transport of Ethernet frames in LAN (10.3125Gbps) applications.

The 10 Gigabit MAC (per IEEE 802.3ae) handles frame encapsulation, verification, 10GbE flow control, and Remote Monitoring/ Simple Network Management Protocol (RMON/ SNMP) statistics management. The IXF18104 also handles the 802.3ae Physical Coding Sub-layer (PCS) functions of the 10 Gigabit Ethernet standard. The PCS hardware handles the 64B/66B encoding/decoding to provide the transition density and balance of the 10.3125Gbps stream.

The system interface supports the industry-standard System Parallel Interface Level 4 (SPI-4) Phase 2. This interface is 16 bits wide with 622Mbps–800Mbps Double Data Rate (DDR) clocking. The SPI-4 Phase 2 interface is Low Voltage Differential Signaling (LVDS), which provides the customer with less connection concerns than previous 64-bit High-Speed Transport Layer (HSTL) interfaces.
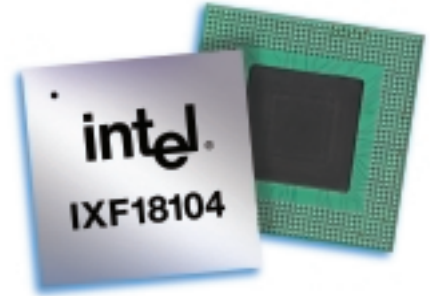
On the line side, the IXF18104 supports the LAN version of the IEEE 802.3ae XSBI interface. The 16-bit LVDS interface operates at 644Mbps to support the 10GbE LAN rate of 10.3125Gbps.

The IXF18104 also supports an integrated Pseudo Random Bit Sequence (PRBS) packet generator/analyzer for the PCS. Line remote, line local, system remote, and system local loop backs are supported for general development functionality test and debug.

Intel® IXF18104 Block Diagram
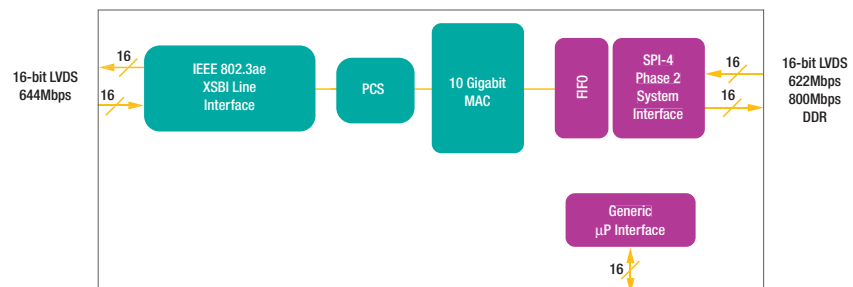
intel®

Intel® IXF1810x Family of 10Gbps Physical Layer Devices—High Level Overview

The Intel family of 10 Gigabit framer devices provide the broadest support for 10Gbps solutions. The protocols supported are STS-192c POS, 10 Gigabit Ethernet WAN, 10 Gigabit Ethernet LAN, and GFP framing. The table below summarizes the high-level feature set:

Part Number	Feature Set	
IXF18101	■ STS-192c/STM 64c POS ■ GFP ■ 10 GbE LAN and WAN with MAC, PCS, and WIS	■ SFI-4/XSBI line side interface ■ SPI-4 Phase 2 system-side interface
IXF18102	■ STS-192c/STM 64c POS ■ GFP	■ SFI-4 line side interface ■ SPI-4 Phase 2 system-side interface
IXF18103	■ 10 Gigabit Ethernet LAN and WAN PHY with MAC, PCS, and WIS	■ XSBI line side interface ■ SPI-4 Phase 2 system-side Interface
IXF18104	■ 10 Gigabit Ethernet LAN PHY with MAC, and PCS	■ XSBI line side interface ■ SPI-4 Phase 2 system-side Interface

All these devices are pin-, footprint-, and register set-compatible. This allows customers to design one line card for multiple applications, providing cost savings over a single line card with other unsupported features.

The IXF18104 is designed to provide a power- and cost-competitive solution for 10GbE LAN Physical Layer and MAC requirements for metro and core networks, and offers the following features and benefits:

Features	Benefits
■ 10GbE LAN PHY	■ Device is optimized to support low cost and low power requirements of 10GbE LAN line card applications
■ XSBI	■ The XSBI interface comprised of 16-bit LVDS I/O runs at 644Mbps for 10GbE LAN applications
■ SPI-4/Phase 2	■ Helps minimize pin count and allows interface architecture to be scaled beyond 10Gbps ■ LVDS I/O, which improves signal integrity versus HSTL implementation ■ It is independent of the type of data protocol being transferred
■ Integrated 10GbE MAC, PCS, WIS	■ Highly integrated 10GbE solution vs. discrete MAC and PCS solutions
■ Multiple types of flow control: Based on internal FIFO watermarks External host control logic	■ Provides flexible loss less flow control which is very important in asynchronous network applications

Key Applications

- Terabit Switch/Router Platforms
- Edge and Core Router Platforms
- SONET/SDH Add/Drop Multiplexers
- Multi-Service Provisioning Platforms
- 10GbE PMON in Long-Haul Transport
- Metro POP Ethernet Switches
- Storage Area Networks
- Network Attached Storage
- Emerging Resilient Packet Ring (RPR)
- Dynamic Packet Transport applications

Intel® IXF18104 Advantage

- Supports advanced SPI-4 Phase 2 instead of only the basic HSTL interface
- Footprint-compatible with the Intel® IXF18101x device family to provide cost reduction for customers who may only need a subset of the IXF18101 functionality
- Optimized for power- and cost-competitive 10GbE LAN line card applications
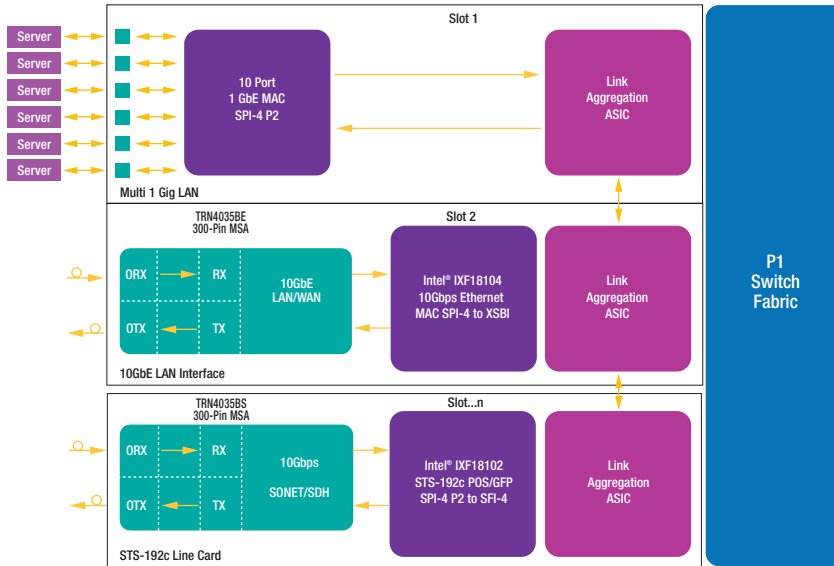
Support Collateral/Tools

Item	Description	Order Number
■ IXF18104	10 Gigabit LAN PHY Technical Product Brief	249941
■ IXF18104	10 Gigabit LAN PHY Short Form Specifications Preview	273607

The following document is available only subject to NDA

■ IXF18104	Data Sheet	Contact your local rep

Intel Advantage

Intel is a leading supplier of communications building blocks, adding value at many levels of integration. Through continuous innovations and advancements in Ethernet connectivity and processing in the network, Intel is delivering, along with its customers and developer community, a wide choice of solutions that enable faster time-to-market, longer time-in-market and increased revenue opportunity.

Intel Access

Developer Web Site	http://developer.intel.com
Networking Components Home Page	http://developer.intel.com/design/network
Intel Literature Center	http://developer.intel.com/design/litcentr (800) 548-4725 7 a.m. to 7 p.m. CST (U.S. and Canada) International locations please contact your local sales office.
General Information Hotline	(800) 628-8686 or (916) 356-3104 5 a.m. to 5 p.m. PST

For more information, visit the Intel Web site at: **developer.intel.com**

intel.

Order Number: 250395-001 Printed in USA/0102/5K/ASI/DC