



CORTINA

Product Brief

Cortina Systems® IXF1104 4-Port 10/100/1000 Mbps Ethernet Media Access Controller With System Packet Interface Level 3 (SPI-3)

Product Highlights

- Configurable on a per-port basis for 10/100/1000 Mbps Ethernet
- Includes flexible MAC, serializer/deserializer (SerDes), and Copper PHY interfaces for low cost connectivity
- Features 32 Kbytes of receive buffer and 10 Kbytes of transmit buffer for loss-less flow control of Jumbo Frames
- Flexible system interface supports 32-bit SPI-3 or 4x8-bit SPI-3 up to 133 MHz

Product Overview

The explosion of Internet Protocol (IP) traffic and the proliferation of sophisticated applications are driving the demand for greater network bandwidth inside and outside the enterprise. This is pushing Ethernet to higher speed and performance in the LAN and at the same time extending Ethernet into new market segments including wireless, broadband access, multi-service switches, metro/core, and storage area networks. This trend motivates networking equipment suppliers to search for Ethernet building blocks that can provide more reliable and cost-effective communications solutions. To address this need, Cortina Systems, Inc. (Cortina) offers the Cortina Systems® IXF1104 4-Port 10/100/1000 Mbps Ethernet Media Access Controller (MAC) with System Packet Interface Level 3 (SPI-3) (IXF1104), a member of the Cortina MAC family of communication building blocks.

The IXF1104 is a 4-port Gigabit Ethernet MAC that provides an aggregate 4 Gbps system-level interface to individual full-duplex 10/100/1000 and half-duplex 10/100 Ethernet MACs. The device features the industry-standard System Packet Interface (SPI-3) providing a high-performance interface to the IXP2400 network processor or to a switching ASIC.

The industry-standard Gigabit Media Independent Interface (GMII) and Reduced Gigabit Media Independent Interface (RGMI) provide the PHY interface for copper connectivity. An integrated SerDes provides a PHY interface for direct connection to optical modules, helping reduce board real estate and system cost.

The integrated LED controller, internal management data input/output (MDIO) interface with auto-scan capability, high port-count, and single CPU interface enable the IXF1104 MAC to reduce the number of components required for a non-blocking twisted-pair or fiber-based Gigabit Ethernet solution. The combination of high integration, flexibility, and loss-less flow control capability make the IXF1104 MAC a highly cost-effective solution for the deployment of high-speed Ethernet capability in a variety of growing application segments.

Product Applications

By providing a combination of MAC, SerDes, and Copper PHY interfaces in a small footprint, the IXF1104 4-port 10/100/1000 Mbps Ethernet MAC provides a highly integrated and flexible Ethernet building block to help address the growing bandwidth requirements in a wide range of applications. These include multiservice switches, edge and MAN routers, DSLAMs, cable modem termination system (CMTS), and wireless infrastructure equipment.

Features

- Four IEEE 802.3-compliant 10BASE-T/100BASE-TX/1000BASE-TX MAC ports in 552 CBGA package
- SPI-3 32-bit LVTTTL interface supports 133-MHz clock; features 32-bit MPHY mode, 4x8-bit SPHY mode, and four independent 8-bit interfaces supporting a single Ethernet port
- Supports four independent 10/100/1000 Mbps full-duplex PHYs with GMII/RGMII interface
- Supports four independent 1000 Mbps full-duplex fiber optics modules with SerDes interface and integrated PCS layer
- Configurable 32/16/8-bit microprocessor interface
- Internal 32 KB receive FIFO and 10 KB transmit FIFO per channel
- Compliance with IEEE 802.3x standard PAUSE command frames
- RMON statistics
- IEEE 802.3 Management Interface (MDIO)
- JTAG and boundary scan
- Broadcast, multicast, and unicast address filtering
- Serial LED Interface
- Independent enable/disable of any port
- 0.18 μ m process technology (CMOS)

Benefits

- Offers high integration for low-cost connectivity
- Supports in-band management functions while still supporting a data rate of 4 Gbps
- Enables easier routing to PHY devices. RGMII provides connectivity using fewer pins than GMII
- Integration reduces cost, noise, and system complexity
- Provides access to configuration and status registers along with access to RMON statistics
- Allows non-blocking support for reception and transmission of Jumbo Frames
- Supports automatic Layer 2 flow control
- Allows for remote monitoring of port activity
- Enables monitoring and control of each of four connected devices
- Reduces system test time
- Supports flexible packet filtering
- Provides a simple interface to display system status
- Provides flexibility in system design
- Lowers power consumption

Environmental Specifications

- Operating range (Copper) -40 °C to 85 °C
- Operating range (Fiber) 0 °C to 70 °C
- Power (typical)
- Enables operation in telco environment
- Enables commercial range operation
- ~5 W

Cortina in Communications

Cortina is a leading supplier of intelligent communication solutions through continuous innovations in advanced port processing and intelligent port connectivity to the Core, Metro, Access and Enterprise Market Segments. With our state-of-the-art high speed analog digital integration, we deliver a wide suite of products that address our customers'

performance, density and flexibility needs enabling faster time-to-market, longer time-in-market, and increased revenue opportunities. Working closely with our customers to understand their system requirements and anticipate their needs, we are creating the foundation ingredients for new generations of services.

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