

Single-Chip Fast Ethernet Media Converter with TS-1000 OAM

Description

The KS8993F is the industry's first single-chip Fast Ethernet media converter that implements TS-1000 operations, administration, and management (OAM) frames for communicating link integrity and status between the customer office (CO) and the customer premise equipment (CPE).

Integrating two 10/100 PHYs, three MACs, a Layer 2 managed switch, and a frame buffer in a compact solution, the KS8993F is ideal for use in 100BASE-FX to 10BASE-T or 100BASE-TX conversion in FTTX applications.

The high-performance switching engine supports both QoS and VLAN as well as a full array of management capabilities.

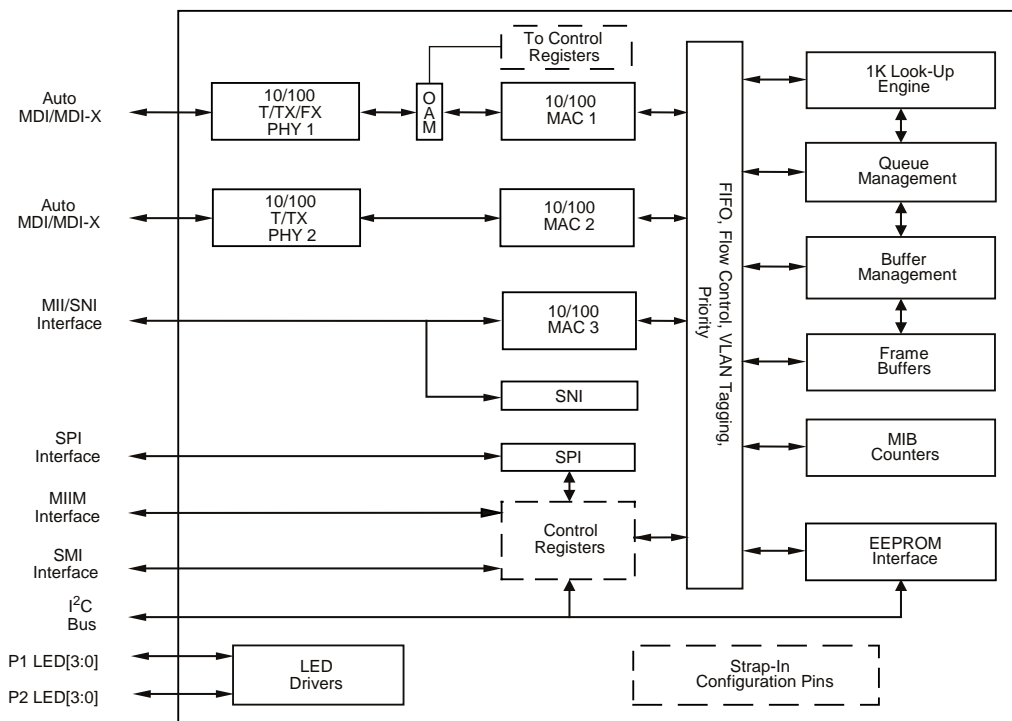
User defined registers (UDRs), another industry first, provide design flexibility and enable low-cost solutions, making the KS8993F an excellent choice for any new media converter design.

Features

- First single-chip 10BASE-T/100BASE-TX to 100BASE-FX media converter with TS-1000 OAM
- Integrated 3-port 10/100 Ethernet switch with three MACs and three PHYs
- UDRs bring OAM to low-cost/complexity nodes
- Full complement of MII/SNI, SPI, MIIM, SMI, and I²C interfaces
- Quality of service (QoS) and class of service (CoS) packet prioritization
- Advanced switching functions, including support for 802.1q VLANs and broadcast storm protection
- Automatic MDI/MDI-X crossover with disable and enable option
- Low power dissipation: <800 mW (includes PHY transmit drivers)

For additional information, contact your local Micrel Field Application Engineer or salesperson.

Block Diagram



OAM Features

- Supports OAM sub-layer which conforms to TS-1000 specification from the Telecommunication Technology Committee
- Sends and receives OAM frames between center and terminal side
- Loopback modes for testing fiber connections
- Far-end fault detection with disable and enable
- Link transparency to indicate link down from link partner

QoS/CoS Packets Prioritization Support

- Per port, 802.1p and DiffServ-based
- Re-mapping of 802.1p priority field per port basis

Advanced Switch Features

- IEEE 802.1q VLAN
- VLAN ID tag/untag options
- IEEE 802.1p/q tag insertion or removal
- Programmable rate limiting from 0Mbps to 100 Mbps
- Broadcast storm protection with percent control
- Double tagging

Switch Management Features

- Port mirroring/monitoring/sniffing
- Thirty-four MIB counters per port
- Loopback modes for remote diagnostic of failure

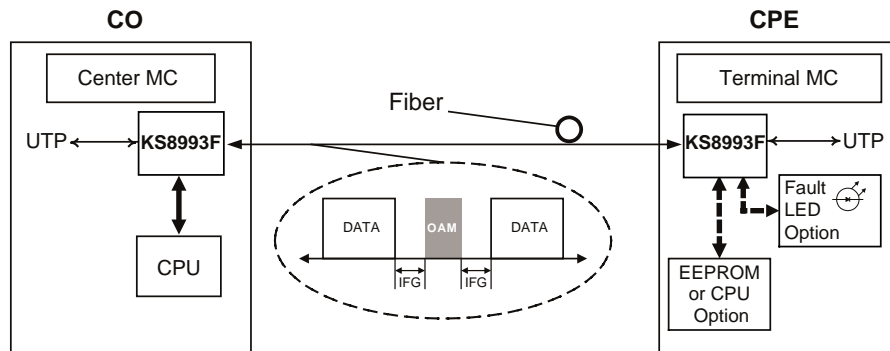
Comprehensive Configuration Register Access

- Serial management interface (SMI), SPI, and I²C to all internal registers
- MII management (MIIM) interface to PHY registers
- I/O pin strapping and EEPROM to program select registers in unmanaged switch mode

Optimized Power Modes, Packaging, and Power Supplies

- Full-chip hardware power-down
- Per port-based software power-save on PHY (idle link detection)
- Comprehensive LED indicator support for link, activity, full/half duplex, and 10/100 speed
- Core: 1.8V
- I/O and transceiver: 3.3V or 2.5V
- Industrial temperature (available from Q2'04)
- Available in 128-pin PQFP

Typical FTTX Application



Note that the KS8993F can be configured via SMI, SPI, or I²C bus.

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