Low-Power, Integrated 10/100BASE-T/TX/FX 5-Port Switch

Description

The KSZ8895 series is low-power, integrated 5-port 10/100 Layer-2 switch on a chip ICs. Leveraging Micrel's latest physical transceiver and switch technology, the KSZ8895 enables a new generation of cost-sensitive and power efficient 10/100Mbps switch systems. Low power consumption, advanced power management, flexible configuration, and sophisticated QoS features (e.g., tag/port-based VLAN support, IPv6 priority classification support) make these devices ideal for IPTV, IP-STB, VoIP, residential gateway, automotive and industrial applications.

The KSZ8895 is designed to meet the GREEN requirements in today's switch systems. Based on an enhanced mix-signal design and 0.13um CMOS technology, the KSZ8895 achieves less than 500mW power consumption in typical operating conditions. In addition, the KSZ8895 also supports a suite of power-down and power-saving modes that helps to further reduce power in various operating conditions.

On-chip termination resistors, single 3.3V supply voltage, and integrated LDO controller simplify board layout while reducing the board real estate. The digital I/O interface supports 1.8V, 2.5V, and 3.3V voltage levels, offering flexibility in design and enabling system-level power saving.
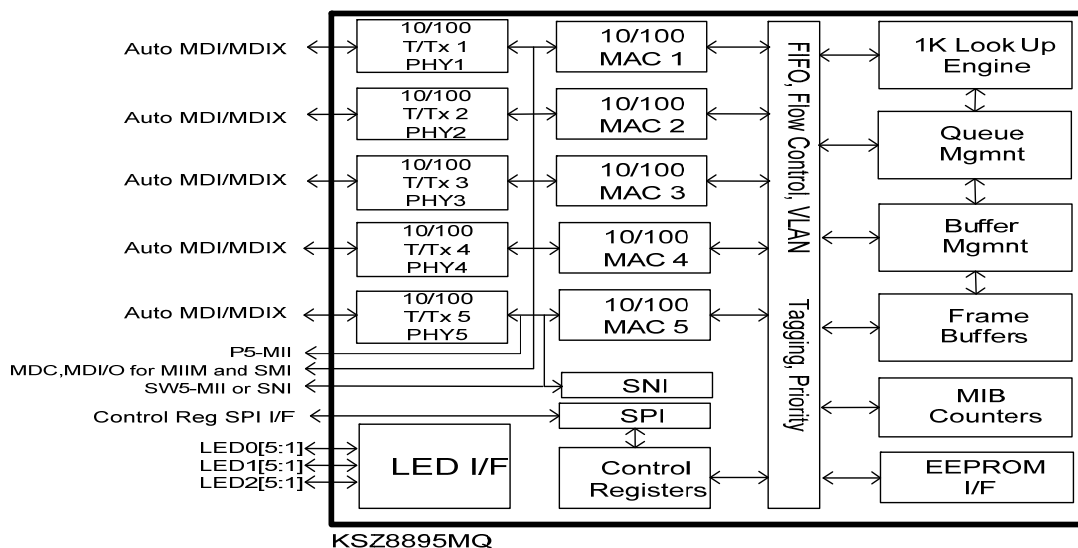
The KSZ8895 integrates five 10/100 transceiver modules and five 10/100 MAC modules. The product family provides flexible interface support, and can be configured to meet requirements of various applications:

- KSZ8895MQ: Four 10/100Base-T/TX transceivers and one MII interface.

- KSZ8895RQ: Four 10/100Base-T/TX transceivers and one RMII interface.

- KSZ8895FMQ: Two 10/100Base-T/TX and two 100Base-FX transceivers and one MII interface.

By default, the KSZ8995 is a stand-alone 5-port 10/100 switch. All KSZ8895 variants are in RoHS compliant, 128-pin PQFP package. Industrial grade is also available.

The datasheets and supporting documents can be found at Micrel's web site at: www.micrel.com.

Functional Diagram

KSZ8895MQ

Features	Benefits
Fully-compliant to IEEE 802.3/802.3u Standard	Standard compliance ensures to work with other standard compliant, already deployed devices.
Single 3.3V supply with internal 1.2V LDO controller, and optional 3.3V, 2.5V or 1.8V VDDIO	Enables low-power design and offers flexibility in design.
Integration of termination resistors on the chip	On-chip termination (eliminating 4 external resistors/transceiver) not only simplifies PCB design and reduces system BOM, but also improves overall signal integrity and EMI emission.
Energy Detect Power Down when the cable is not plugged; and power down/ slow oscillator mode when the device is not in use.	Power consumption is optimized based on the status of the link or the device.
Rapid spanning tree (RSTP) support	Provides faster spanning tree convergence after network topology change (< 6 sec vs. 30-50 sec for STP).
2K Byte maximum packet size	Improves the efficiency of bulk data transfer, and system performance.
Internally generated 50Hz RMII reference clock (KSZ8895RQ only)	The use of 25MHz crystal as input reference clock no longer eliminates the need for external oscillator. It reduces the system BOM in the RMII mode.
HP Auto MDI/MDIX crossover support	Auto-MDI/MDIX eliminates the need for cross-over cable, thus reduces installation costs. Easy to use.
Backward compatible with KSZ8995	Provides smooth migration path from the existing 5-port KSZ8995 switch products.

Applications

- Digital TV/STB
- Broadband Gateway/router
- VoIP Gateway

- GPON ONU
- Industrial control
- Automotive

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