MICREL ®

Low-Power, Integrated 10/100BASE-T/TX 4-Port Switch

Description

The KSZ8864RMN is low-power, integrated 10/100Base-T/TX 4-port Layer-2 switch on a chip IC, in industry's smallest footprint. Supporting flexible MAC interface configurations and housed in 64-pin QFN package, the KSZ8864RMN enables a new generation of designs for IP TV and other Ethernet switch applications.

Leveraging Micrel's latest physical transceiver and high-speed non-blocking switch technology, the KSZ8864RMN provides low power consumption, advanced power management, flexible configuration, and sophisticated QoS features (e.g., tag/port-based VLAN support, IPv6 priority classification support).
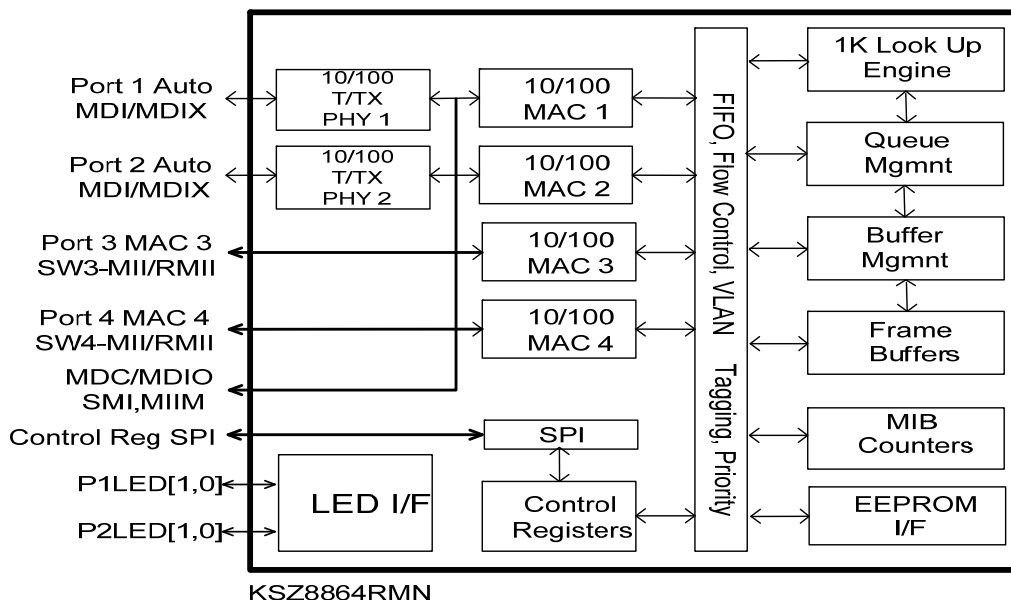
The KSZ8864RMN is designed to meet the GREEN requirements of IPTV systems. Based on an enhanced mix-signal design and 0.13um CMOS technology, the KSZ8864RMN achieves less than 500mW power consumption in typical operating conditions. In addition, the KSZ8864RMN also supports a suite of power-down and 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 4-port KSZ8864RMN consists of two integrated 10/100Base-T/TX PHYs, and two MAC interfaces. The two MAC interfaces can be configured to support either MII or RMII. The MAC interfaces can also be configured to the MAC mode or the PHY mode. In the RMII mode, the KSZ8864RMN can internally generate 50MHz reference clock output. Alternatively, it can also use external 50MHz system clock as clock source.

The KSZ8864RMN datasheet and supporting documents can be found at Micrel's web site at: www.micrel.com.

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Functional Diagram

KSZ8864RMN

Features	Benefits
Fully-compliant to IEEE 802.3/802.3u Standard	Standard compliance ensures to work with other standard compliant, already deployed devices.
Flexible MAC interface configurations	Supports design flexibility in connecting various external devices.
64-pin QFN package	Smallest footprint reduces board real estate and enables compact system design.
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	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.

Applications

- Digital TV
- IP STB
- Industrial Ethernet

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