

2-Port Ethernet Switch with Non-PCI Interface

Description

The KSZ8842-16MQL and KSZ8842-32MQL are the industry's first 2-port switches with a non-PCI CPU interface. The KSZ8842-16MQL (or -32MQL) is a proven, 4th generation, integrated, Layer 2 switch that is compliant to the IEEE802.3u standard.

The KSZ8842-16MQL (or -32MQL) can be configured as a low-latency repeater to allow for 'cut thru' in latency critical Embedded or Industrial Ethernet applications. For industrial automation applications in the repeater mode, the KSZ8842-16MQL (or -32MQL) runs in half-duplex mode regardless of the application.

The KSZ8842-16MQL (or -32MQL) offers an extensive feature set that includes tag/port-based VLAN, QoS priority management, MAC filtering function, MIB counters, and CPU control/data interfaces to effectively address both current and emerging Fast Ethernet applications.

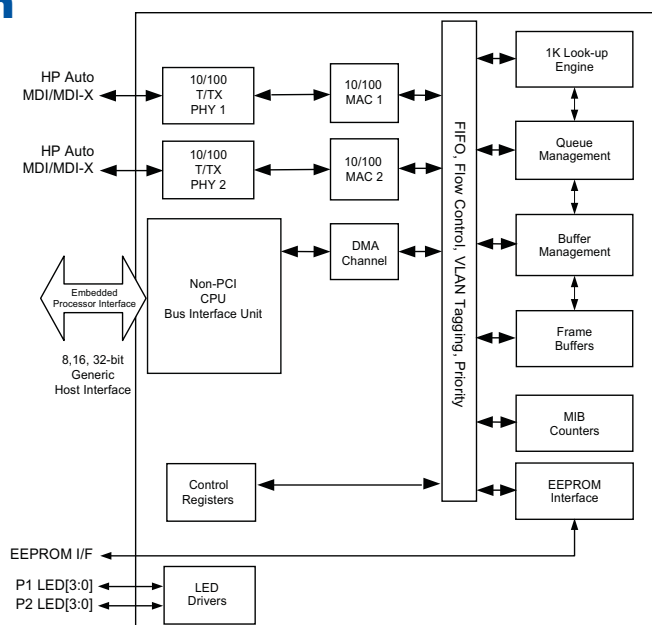
The KSZ8842-16MQL (or -32MQL) contains two 10/100 transceivers with patented mixed-signal low-power technology, two media access control (MAC) units, a direct memory access (DMA) channel, a high-speed non-blocking switch fabric, a dedicated 1K entry forwarding table, and on-chip frame buffer memory.

Benefits

Offers all of the features of an integrated Layer 2 managed switch plus:

- Fully compliant to the IEEE802.3u standard
- Repeater mode capabilities to allow for 'cut-thru' in latency critical Industrial Ethernet or Embedded Ethernet applications
- MAC filtering function to filter unicast packets
- Dynamic buffer memory scheme
 - Essential for applications such as Video over IP where image jitter is unacceptable
- 2-Port switch with flexible 8-, 16- or 32-bit generic host processor interfaces
- Micrel LinkMD® cable diagnostic capabilities to determine cable length, diagnose faulty cables, and determine distance to fault
- HP Auto MDIX crossover with disable and enable option
- Industrial temperature support: -40°C to +85°C (KSZ8842-16MVLI samples available)
- Four priority queues to handle voice, video, data, and control packets

Block Diagram



Note: For an MII/RMII, I²C or SPI interface, use the KSZ8893MQL.
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Features

Switch Management

- Non-blocking switch fabric assures fast packet delivery by utilizing a 1K entry forwarding table
- Fully compliant to the IEEE 802.3u standard
- Full-duplex IEEE 802.3x flow control (Pause) with force mode option
- Half-duplex back pressure flow control

Advanced Switch Management

- IEEE 802.1q VLAN support for up to 16 groups (full-range of VLAN ID)
- VLAN ID tag/untag options, per port basis
- IEEE 802.1p/q tag insertion or removal on a per port basis (egress)
- Programmable rate limiting at the ingress and egress port
- Broadcast storm protection
- IEEE 802.1d spanning tree protocol support
- MAC filtering function to filter or forward unknown unicast packets
- Unknown MAC address forwarding function
- Direct forwarding mode enabling the processor to identify the ingress port and to specify the egress port
- IGMP v1/v2 snooping support for multicast packet filtering
- IPv6 Multicast Listener Discovery (MLD) snooping support

Monitoring

- Port mirroring/monitoring/sniffing: ingress and/or egress traffic to any port
- Management information base (MIB) counters for fully compliant statistics gathering: 34 MIB counters per port
- Loopback modes for remote diagnostic of failure

Comprehensive Register Access

- Control registers configurable on the fly (port-priority, 802.1p/d/q)

QoS/CoS Packets Prioritization Support

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

Power Modes, Packaging and Power Supplies

- Full-chip hardware power-down (register configuration not saved) provides for low power dissipation
- Per port-based software power-save on PHY (idle link detection, register configuration preserved)
- Single power supply: 3.3V
- Commercial temperature range: 0°C to +70°C
- Industrial temperature range: -40°C to +85°C (KSZ8842-16MVL1 ordering code)
- RoHS compliant devices

Applications

- Industrial applications for daisy chaining multiple devices
- Industrial control in latency critical applications
- Port redundancy and port monitoring
- Security cameras
- VoIP phone and ATA adaptors

Markets

- Fast Ethernet
- Embedded Ethernet
- Industrial Ethernet

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