

## 2-Port Ethernet Switch with PCI Interface

### Description

The KSZ8842-PMQL is the industry's first 2-port switch with a PCI CPU interface. An Industrial Temperature grade part, the KSZ8842-PMQLI will also be available from Q1, 2006. The KSZ8842P is a proven, 4th generation, integrated, fully managed Layer 2 switch that is entirely compliant to IEEE802.3u standards.

The KSZ8842P 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, it runs in half-duplex mode.

The KSZ8842P 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.

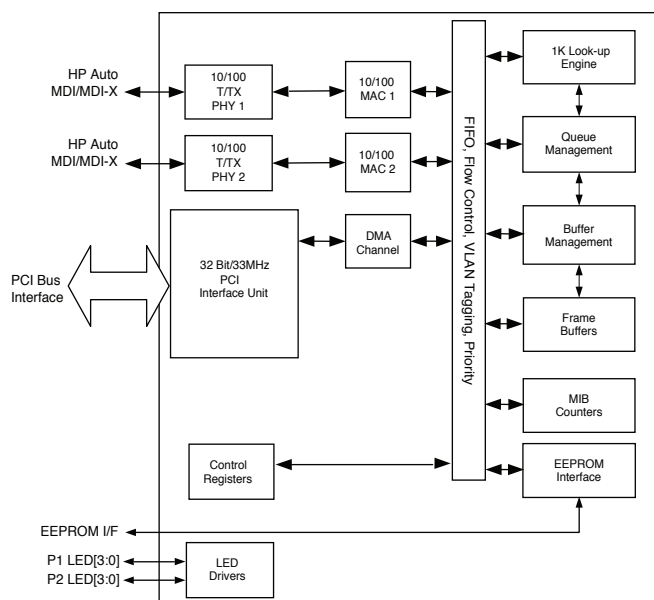
The KSZ8842P contains two 10/100 transceivers with patented mixed-signal low-power technology, two 1K entry media access control (MAC) units, a separate DMA channel, a high-speed non-blocking switch fabric, a dedicated 1K entry forwarding table, and an on-chip frame buffer memory.

### Benefits

In addition to offering all of the features of an integrated Layer 2 managed switch:

- 2-port switch with 32 bit/33MHz PCI bus for different host processor interfaces
- Fully compliant to the IEEE802.3u standard
- Repeater mode capabilities to allow for 'cut-thru' in latency critical Industrial Ethernet or Embedded Ethernet applications
- Dynamic buffer memory scheme
  - Essential for applications such as Video over IP where image jitter is unacceptable
- Micrel LinkMD™ cable diagnostic capabilities to determine cable length, determine distance to fault, and to diagnose faulty cables
- HP Auto MDIX crossover with disable and enable option
- Industrial temperature support: -40°C to +85°C
- Four priority queues to handle voice, video, data, and control packets

### Block Diagram



Note: For an MII/RMII, I<sup>2</sup>C or SPI interface, use the KSZ8893ML. LinkMD is a trademark of Micrel, Inc.

## Features

### Switch Management

- Non-blocking switch fabric assures fast packet delivery by utilizing a 1K entry
- 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 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

### 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-PMQLI ordering code)
- Available in 128-pin PQFP

## Applications

- Consumer Applications:
  - Set-Top Box • Fax • TV • Digital TV
- Video over IP
- Industrial Control in Latency Critical Applications:
  - Motion Control
- Industrial Control Sensor Devices:
  - Temperature • Pressure • Level • Valves
- Automotive Security and Surveillance

## Markets

Fast Ethernet  
Embedded Ethernet  
Industrial Ethernet

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

### Contact Micrel Semiconductor

| Location               | Address                                                                   |                             | Telephone         | Fax               |
|------------------------|---------------------------------------------------------------------------|-----------------------------|-------------------|-------------------|
| Corporate HQ           | 2180 Fortune Drive                                                        | San Jose, CA 95131 USA      | +1 408 944 0800   | +1 408 944 0970   |
| Western USA            | 2180 Fortune Drive                                                        | San Jose, CA 95131 USA      | +1 408 944 0800   | +1 408 944 0970   |
| Central USA            | 2425 N. Central Express Way, Suite 351                                    | Richardson, TX 75080 USA    | +1 972 393 2533   | +1 408 474 1210   |
| Eastern USA            | 93 Branch Street                                                          | Medford, NJ 08055 USA       | +1 609 654 0078   | +1 609 654 0989   |
| Latin America          | 2425 N. Central Express Way, Suite 351                                    | Richardson, TX 75080 USA    | +1 972 393 2533   | +1 408 474 1210   |
| China                  | Rm 601, Bldg B, Int'l Chamber of Commerce Mansion, Fuhua Rd 1 Futian Dist | Shenzhen, P.R. China 518048 | +86 755 8302 7618 | +86 755 8302 7637 |
| Japan                  | Queens Tower 14F, 2-3-1, Minatomirai, Nishi-ku, Yokohama-shi              | Kanagawa 220-8543, Japan    | +81 45 224 6616   | +81 45 224 6716   |
| Korea                  | 8F, AnnJay Tower Bldg, 718-2, Yeoksam-dong, Kangnam-ku                    | Seoul 135-080, Korea        | +82 2 538 2380    | +82 2 538 2381    |
| New Zealand            | Office 2, CML Bldg, 2 Perry Street                                        | Masterton, New Zealand      | +64 6 378 9799    | +64 6 378 9599    |
| Singapore              | 300 Beach Road, #10-07 The Concourse                                      | Singapore 199555            | +65 6291 1318     | +65 6291 1332     |
| Taiwan                 | 4F, No. 18 Lane 321, Yang-Guang Street, Nei-Hu Chu                        | Taipei 11475 Taiwan, R.O.C  | +866 2 8751 0600  | +866 2 8751 0746  |
| UK/EMEIA               | 1st Floor, 3 Lockside Place, Mill Lane, Newbury, Berks                    | United Kingdom RG14 5QS     | +44 1635 524455   | +44 1635 524466   |
| France/Southern Europe | 10 Avenue du Quebec, Villebon - B.P. 116, 91944 Courtaboeuf Cedex         | France                      | +33 1 60 92 4190  | +33 1 60 92 4189  |
| Sweden/Nordic          | Lundagatan 11 6tr, SE-171 63 Solna                                        | Sweden                      | +46 8 470 5950    | +46 8 470 5950    |