

Multi-Port Gateway-on-a-Chip

Description

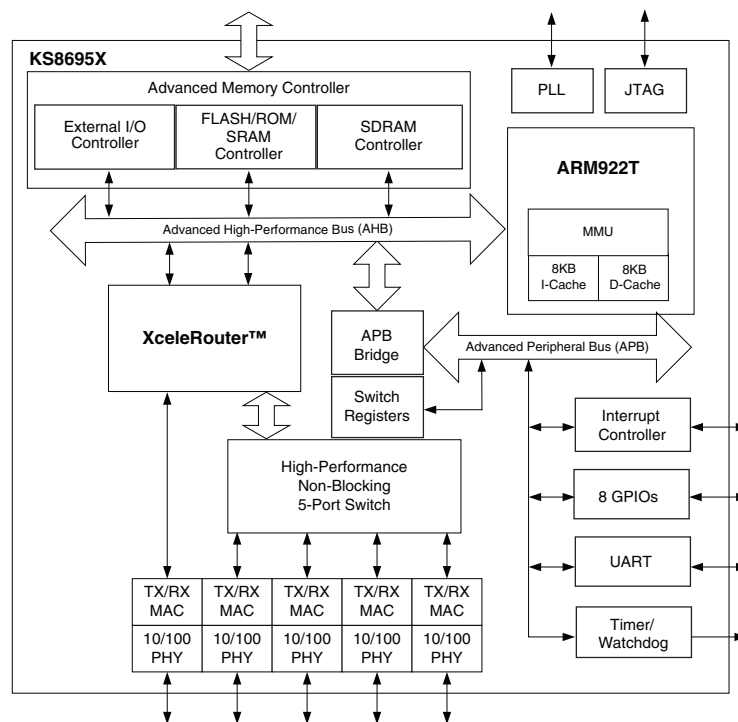
The CENTAUR KS8695X, Multi-Port Gateway-on-a-Chip, delivers a new level of networking integration and performance for accelerating broadband gateway development. The key components of the KS8695X include:

- Integrated Layer 2 managed switch with five Fast Ethernet transceivers and patented mixed-signal low-power technology; five media access control (MAC) units; a high-speed non-blocking switch fabric; a dedicated address lookup engine; an on-chip frame buffer memory, and LED controls. One port is partitioned for WAN interface with the other four ports for LAN access.
- A 166MHz ARM9™ processor with memory management unit (MMU) and 8KB I-cache and 8KB D-cache.
- XceleRouter™ technology for the WAN and LAN interfaces.
- Shared programmable 8/16/32-bit data bus and 22-bit address bus with up to 64MB total memory space for SDRAM, ROM, Flash, SRAM, and all peripheral devices.
- Other peripheral support logic including GPIO, a watchdog timer, an interrupt controller, and a JTAG debugging interface.

The KS8695X combines proven PHY, MAC, and switch technology with protocol engines, DMA engines, and the powerful ARM922T processor to create a solution that saves BOM costs, board real estate, and design time while providing outstanding performance for a variety of router applications.

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

Block Diagram



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Features and Benefits

Centaur KS8695X, featuring XceleRouter technology, is a single-chip multi-port gateway-on-a-chip with all the key components integrated for a high-performance and low-cost broadband gateway

- **ARM922T High-Performance CPU Core**
 - ARM922T core at 166MHz
 - 8KB I-cache and 8KB D-cache
 - Memory management unit (MMU) for Linux and WinCE®
 - 32-bit ARM and 16-bit thumb instruction sets for smaller memory footprints
- **XceleRouter Technology**
 - TCP/UDP/IP packet header checksum generation to offload CPU tasks
 - IPv4 packet filtering on checksum errors
 - Automatic error packet discard
- **Integrated Switch Engine and Transceivers**
 - Five 10/100 transceivers and five MACs (1P for WAN interface, 4P for LAN switching)
 - 10BASE-T, 100BASE-TX, and 100BASE-FX modes (FX on the WAN port)
 - On-chip SRAM as frame buffer memory
 - Wire-speed switching
 - VLAN ID and 802.1p tag/untag options
 - Extensive MIB counter management support
 - IGMP snooping for multicast packet filtering
 - Port-based VLAN
 - QoS/CoS packet prioritization support: per port, 802.1p and DiffServ-based
 - 802.1D spanning tree protocol support
 - Dedicated 1K-entry look-up engine
 - Automatic MDI/MDI-X crossover on all ports
 - Port mirroring/monitoring/sniffing
 - Broadcast storm protection with percent control
 - Full- and half-duplex flow control
- **Memory and External I/O Interfaces**
 - 8/16/32-bit wide shared data path for SDRAM, ROM/SRAM/Flash and external I/O
 - Total memory space up to 64MB
 - Intel®/AMD®-type Flash support

- **WAN and LAN DMA Engines and FIFO**
 - DMA engine with burst mode support for efficient WAN and LAN data transfers
 - FIFOs for back-to-back packet transfers
- **Peripheral Support**
 - 8/16/32-bit external I/O interface supporting PCMCIA or generic CPU/DSP host I/F
 - Eight general purpose input/output (GPIO)
 - Two 32-bit timer counters (one watchdog)
 - Interrupt controller
 - ARM922T JTAG debug interface
- **Power Management**
 - Reduced CPU and system clock speeds
- **System Design**
 - Up to 166MHz CPU and 125MHz bus speed
- **Reference HW/SW Evaluation Kit**
 - Hardware evaluation board (passes class B EMI)
 - Board support package including firmware source codes, Linux kernel, and software stacks
 - Documentation for design and programming
- **Commercial Temperature Range: 0°C to +70°C**
- **Available in 208-pin PQFP**

Applications

- Multi-port broadband gateway
- Multimedia gateway
 - Streaming audio and video
- Multi-port firewall and VPN appliances
 - Network printers
 - Network storage
- Combination wireless and wireline gateway
 - Wireless networking
- Multi-port VoIP gateway
- Fiber-to-the-Home managed CPE

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