

Multi-Port PCI Gateway-on-a-Chip

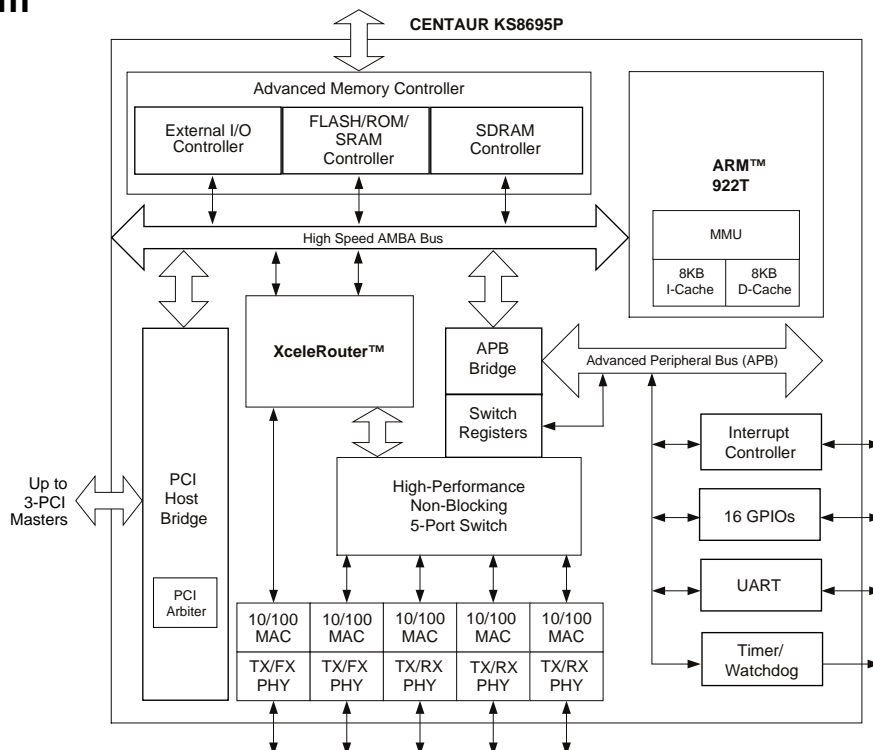
Description

The CENTAUR KS8695P is a Multi-Port PCI Gateway Solution that delivers a new level of networking integration, performance, and overall BOM cost savings, enabling original equipment manufacturers (OEMs) to provide customers with feature-rich, low-cost solutions for the residential gateway and small office environment.

- Integration of a PCI arbiter supporting three external masters.
 - Allows incorporation of a variety of productivity enhancing system interfaces, including the expanding 802.11 a/g/b wireless LAN.
- High-performance ARM™ CPU (ARM922T) with 8KB I-cache, 8KB D-cache, and a memory management unit (MMU) for Linux and WinCE® support.
- XceleRouter™ technology to accelerate packet processing.
- Proven wire-speed switching technology that includes 802.1Q tag-based VLAN and quality of service (QoS) support.
- Five patented, mixed-signal, low-powered Fast Ethernet transceivers with corresponding media access control (MAC) units.
- Advanced memory interface with programmable 8/16/32-bit data and 22-bit address bus with up to 64MB of total memory space for Flash, ROM, SRAM, SDRAM, and external peripherals.

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

Block Diagram



XceleRouter is a trademark of Micrel, Inc. AMD is a registered trademark of Advanced Micro Devices, Inc. ARM is a trademark of Advanced RISC Machines Ltd. Intel is a registered trademark of Intel Corporation. WinCE is a registered trademark of Microsoft Corporation.

Features

The CENTAUR KS8695P, featuring XceleRouter™ technology, is a single-chip multi-port PCI 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
- **33MHz 32-Bit PCI Interface**
 - Version PCI 2.1
 - Supports three external masters or guest-mode
 - Support for miniPCI and cardbus peripherals
- **Integrated Ethernet Transceivers and Wire-Speed Switch Engine**
 - Five 10/100 Ethernet transceivers and five MACs (1P for WAN interface, 4P for LAN switching)
 - 100BASE-FX mode option on the WAN port and one LAN port
 - Automatic MDI/MDI-X crossover on all ports
 - 802.1Q tag-based VLAN (16 VLANs, full range VID) port-based VLAN
 - QoS/CoS per port 802.1p and DiffServ-based
 - On-chip frame buffer SRAM
 - VLAN ID and 802.1P tag/untag option per port
 - 802.1D spanning tree protocol support
 - Programmable rate-limiting per port: 32kbps increments to wire speed
 - Extensive MIB counter management support
 - IGMP snooping for multicast packet filtering
 - Port mirroring/monitoring/sniffing
 - Broadcast storm protection with % control global and per port basis
 - Full- and half-duplex flow control
- **XceleRouter™ Technology**
 - TCP/UDP/IP packet header checksum generation to offload CPU tasks

- **Memory and External I/O Interfaces**
 - 8/16/32-bit wide shared data path for Flash, ROM, SRAM, SDRAM, and external I/O
 - Total memory space up to 64MB
 - Intel®/AMD®-type Flash support
- **Peripheral Support**
 - 8/16/32-bit external I/O interface supporting PCMCIA or generic CPU/DSP host I/F
 - Sixteen general purpose input/output (GPIO)
 - Two 32-bit timer counters (one watchdog)
 - Interrupt controller
- **System Design**
 - Up to 166MHz CPU and 125MHz bus speed
 - 289 PBGA package (19mm x 19mm) saves board real estate
 - Two power supplies: 1.8V core and Ethernet RX supply, 3.3V I/O and Ethernet TX supply
 - Built-in LED controls
- **Debugging**
 - JTAG debug interface
 - UART for console port or modem backup
- **Power Management**
 - CPU and system clock speed step-down options
 - Low-power Ethernet transceivers
 - Per port power-down and Ethernet transmit disable
- **Reference Hardware and Software Evaluation Kit**
 - Hardware evaluation board (passes class B EMI)
 - Board support package including firmware source codes
 - Complete hardware and software reference designs available
- **Commercial Temperature Range: 0°C to +70°C**
- **Available in 289-Pin PBGA**

Applications

- Multimedia gateway
- Network storage element
- Multi-port broadband gateway
- Multi-port firewall and VPN appliances
- Combination wireless and wireline gateway
- Fiber-to-the-home managed CPE
- Digital audio access point
- Multi-port VoIP gateway

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