QuickLogic Corporation

V340HPC PCI System Controller

Features

- Fully compliant with PCI Local Bus Specification, Revision 2.2
- Configurable for a single 64-bit PCI bus or dual 32-bit PCI buses
- Up to 100 MHz local bus supports an external cache with separate 66 MHz asynchronous PCI clocks
- Up to 2 Kbyte burst access on both local and PCI interfaces
- I2O-Ready™ ATU and messaging unit
- Interrupt controller; 8-bit watchdog timer
- Four 32-bit general purpose timers
- System heartbeat and bus watch timers
- Integrated SDRAM controller with support for up to 2 Gbyte, with optional ECC protection
- Internal SRAM scratchpad for immediate access from the local processor
- Multiple outstanding reads with out-of-order return support for the RM7000™ processor
- On-the-fly byte order (endian) conversion with automatic byte swapping
- Hot Swap Ready™ per PICMG® Hot Swap Specification, v2.1
- Programmable chip select/peripheral device strobe generation
- Four independent DMA channels with chaining, multiprocessor support, and fly-by DMA support
- UART serial interface
- 3.3V operation with 5V tolerant input
- 456-pin BGA package

CPUs Supported

R4xxx, R5xxx, R7xxx

Product Description

A highly scalable, full 64-bit PCI system controller for high-end embedded systems, the V340HPC is designed specifically for applications whose performance levels are unattainable with existing 32-bit solutions, the V340HPC's superior level of integration results in a powerful system solution for 64-bit MIPS® architecture processors. It provides a direct interface for PMC-Sierra, RM70xx, RM52xx, NEC VR5500, and VR5000.

High Performance Three Way Architecture

The V340HPC provides simultaneous connectivity to multiple PCI buses, high performance processors, and commodity synchronous DRAMs without the use of any external components. A three-way bus architecture, with a single-hop bridging technique using FIFOs, allows the MIPS® architecture processor, PCI bus, and memory system to operate independently. Using three concurrent buses also increases system performance and eliminates deadlock conditions.

Highly Flexible and Scalable

The V340HPC offers the flexibility of implement a single 64-bit, 66 MHz PCI bus or dual 32-bit, 66 MHz PCI bus. An internal, embedded, non-transparent PCI-to-PCI bridge is available when operating in dual PCI bus mode. To move data in the system quickly, select from four fully independent DMA channels, the fly-by DMA feature, or a combination of the two. The V340HPC supports optional external cache to increase the performance level as required.

**V340HPC Block Diagram—
Dual 32-bit PCI Buses**
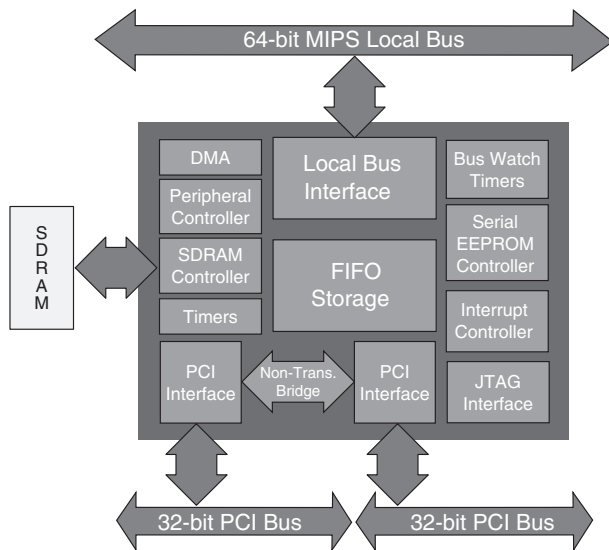
**V340HPC Block Diagram—
Single 64- or 32-bit PCI Buses**
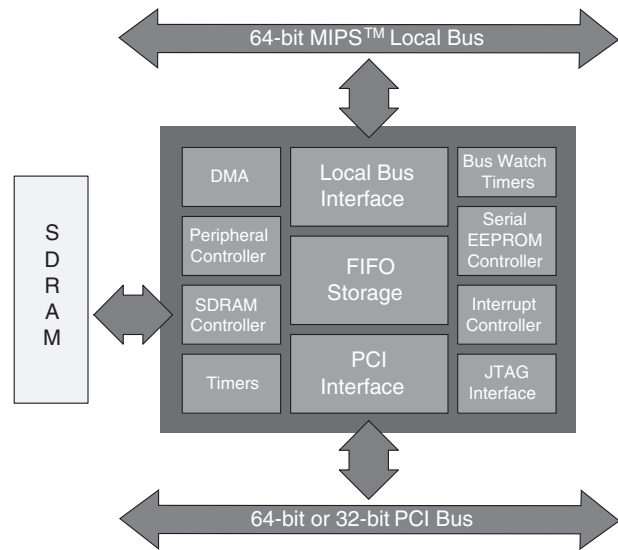
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