

Single-chip solution for connecting
up to four PowerPC 7xx processors



CPC710-133 PCI Bridge and SDRAM Memory Controller

Highlights

- ***Provides a high-performance single-chip system controller for PowerPC® processor designs geared to high-throughput applications***
- ***Features an integrated 133MHz SDRAM controller with support for industry-standard memory and a 133MHz 2.5V CPU bus interface with an internal arbiter that supports multiple processors***
- ***Dual PCI interfaces can ease board design and provide design flexibility***
- ***Multiple internal data paths support high-speed data transfers between interfaces***

Robust features support diverse high-speed designs

The CPC710-133 PCI Bridge SDRAM Memory Controller is a single-chip solution for applications requiring high throughput, including networking devices such as access routers, gateways, VPN equipment and switches, and real-time-data and signal-processing applications. The CPC710-133 controller's highly

integrated, full-featured design enables a wide range of configurations geared to diverse requirements. Implemented in IBM's SA-12e process technology, the CPC710-133 controller takes advantage of IBM's advanced ASIC capabilities to deliver exceptional price/performance to satisfy price-sensitive applications.

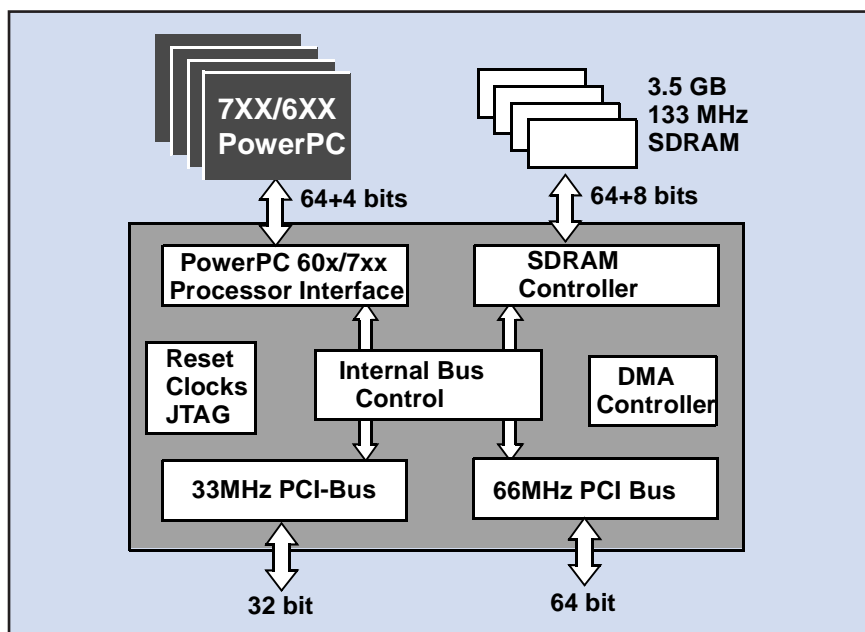
PowerPC Processor Interface

Offering speeds of up to 133MHz (at 2.5V), the CPC710-133 CPU interface implements a 64-bit data bus and a 32-bit address bus with internal arbitration logic that supports up to four PowerPC 7xx processors and pipelining of up to six outstanding transactions. Additionally, separate dual 32-byte load buffers for the CPU bus

and each PCI bus, along with multiple data paths, allow concurrent non-blocking transfers to support fast-access designs.

SDRAM Memory Controller

The versatile CPC710-133 memory controller supports a wide range of industry-standard memories, enabling customers to choose cost-effective solutions for their applications. The memory controller supports 133MHz SDRAMs, PC133-compliant SDRAM modules and DIMMs, and registered SDRAM DIMMs. Designers can use 16, 64, or 256Mb memories in 2- to 4-bank configurations or design for up to 3.5GB in 6 DIMMs. The CPC710-133 provides high reliability, without a performance penalty, using an



CPC710-133 block diagram

CPC710-133 PCI Bridge and SDRAM Memory Controller Specifications



Technology	0.25um CMOS SA-12e
Peak performance	Up to 132MBps on the 32-bit PCI bus@33MHz Up to 528MBps on the 64-bit PCI bus@66MHz Up to 1,064MBps memory bandwidth
Clocking	PCI-32 Interface clock: 33MHz PCI-64 Interface clock: 33 to 66MHz PowerPC bus: 133MHz, 100MHz
Power dissipation	2.1W@133MHz typical (estimate)
Power supply	3.3V +/-5% (I/O logic) 2.5V +/-2.5% (core and CPU bus logic)
Temperature range	-40°C to 70°C ambient (85°C junction)
Storage temperature	-65°C to 150°C
Signal I/Os	480
Packaging	728-contact, 1.27mm pitch, 35x35mm, FC-PBGA with direct lid attach (DLA)
Part number	IBM25CPC710CF3B133

8-bit ECC capability for single-bit error correct on double-bit error detection.

Dual PCI Interfaces and other chip features

Two PCI Interfaces and a range of other features can enhance design flexibility and help enable manufacturers to take advantage of new faster PCI 64-bit devices as well as widely available 32-bit PCI peripherals.

- Dual PCI Interfaces
 - Fully compliant with PCI bus Revision 2.1
 - One 32-bit, 33MHz PCI bus (3.3V I/O, supports +5V signaling)
 - One 64-bit, 33 to 66MHz PCI bus (3.3V, supports only 3V signaling)
 - Programmable base address register, providing memory-mapping flexibility
 - PCI master/slave with burst operation

- Programmable Little/Big Endian byte order conversion
- Support for internal or external PCI bus arbitration
- Up to 2MB of boot ROM and 256MB of extended FLASH support on 32-bit PCI bus
- Additional features
 - Single-channel, chained DMA Controller
 - Ability to address and program all features and configuration registers from the processor
 - IEEE 1149.1 JTAG port

For more information, visit our Web site at: www.ibm.com/powerpc

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