



PowerPro™ PowerPC® Memory Controller Product Brief

Device Overview

The IDT PowerPro delivers memory control support for the IDT PowerPC-to-PCI bus switch — PowerSpan II. The PowerPro is designed for applications to leverage the Switched PCI architecture of PowerSpan II in PowerPC 750 applications. In joint PowerPC 750 and PowerQUICC II (MPC8260) applications, PowerPro enables ECC protection.

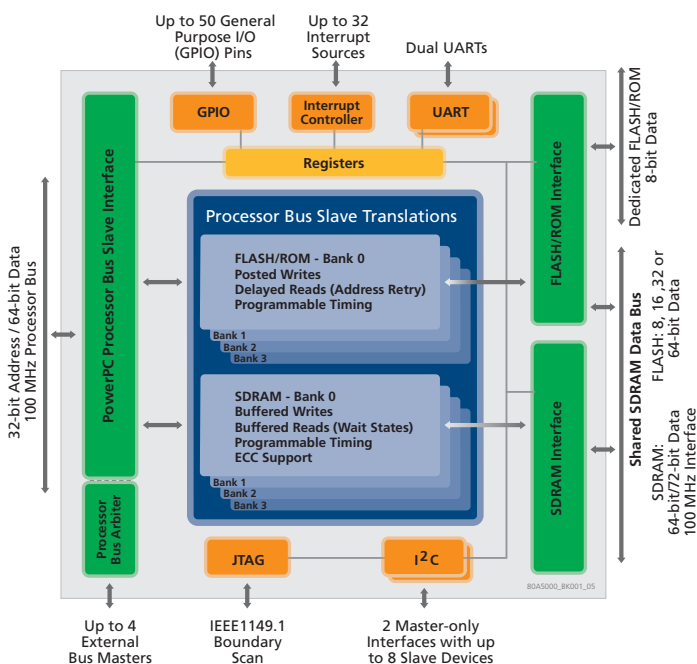
The key functionality includes PC-100 SDRAM control and ECC protection. These features are becoming standard requirements in next-generation PowerPC systems. PowerPro supports 8-, 16-, and 32-bit Flash, as well as other local peripheral devices such as UARTs.

Increasing PowerPC bus frequencies are making it more difficult to add slow peripherals to the processor bus. Local device support on the PowerPro enables designers to segment slow peripherals from the high-speed PowerPC bus.

Commercially available PowerPC memory controllers are traditionally integrated with a large and complex PCI host bridge. PowerPro is the only discrete SDRAM controller for non-PCI PowerPC applications on the market today.

PowerPro, combined with PowerSpan II, offers a new, modular approach to PowerPC system design.

Block Diagram



Features

Processor (60x) Bus Interface

- 100 MHz bus frequency
- 64-bit data bus
- 8-bit ECC on the data bus
- Optional ECC protection
- PowerPC arbiter

Memory Interface

- Directly control data latching through PowerPro
- SDRAM Interface
- FLASH/ROM Interface
- 64-bit data bus — 72-bit data bus with ECC
- 32 Mbytes to 4 GB of SDRAM
- Supports four SDRAM DIMMs — 1 GB support for each SDRAM DIMM
- Read Ahead buffer
- Flexible page management — independently controls up to 32 pages

Integrated Features

- 50-bit General Purpose I/O port
- Dual UART (DUART)
- Interrupt Controller
- I2C Interface

Packaging

- 376-pin PBGA, 1 mm ball pitch
- Temperature range
 - Commercial: 0°C to 70°C
 - Industrial: -40°C to 85°C

Benefits

- Modular PowerPC design
- Increased throughput with memory system optimization
- Proven product testing in a hardware emulation environment
- Reduced design effort in both software and hardware PowerPC systems

Typical Applications

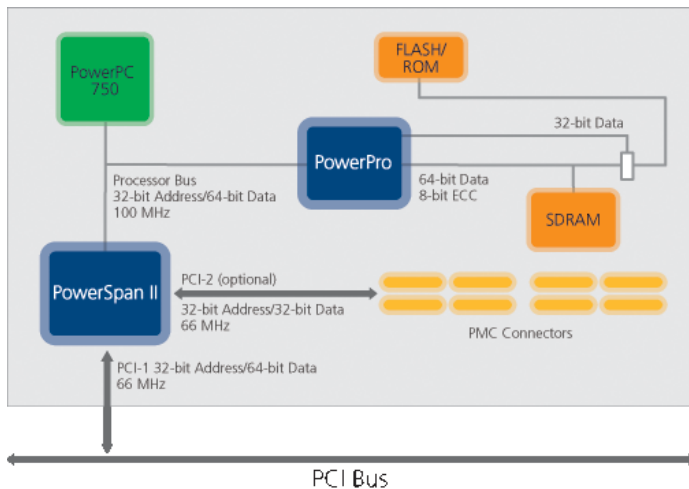
PowerPro interfaces to multiple members of the PowerPC family of processors and can be used in many PowerPC architectures. PowerPro can also be used in systems that support the PCI bus.

PowerPro is targeted at communications infrastructure applications, such as:

- ADSL concentrators
- CDMA base stations
- VoIP gateways
- Ethernet switches
- VPN equipment
- MPEG 2 encoders
- Exchange carrier switching equipment

The following figure illustrates a typical PowerPro application involving the PowerPC 750 and PowerSpan II. In this diagram, PowerPro is used in a PowerPC and PCI system.

PowerPro, PowerPC, and PCI Application



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