Application of the Week
January 22, 2003 Week 37

Application: CardBus-to-PCI Expansion
Pericom Device: PI7C8150ND PCI-to-PCI Bridge

Overview

Desktops traditionally have more power than laptop computers. Desktops also have the flexibility to add different peripheral cards via the PCI slots available on the motherboard. How do you take your desktop along to a remote location? What if you need to take your desktop to a different location every day? You could easily take a laptop to remote locations, but how can you utilize the peripheral cards on your desktop?
SOLUTION: Use a CardBus-to-PCI expansion system.

What is a CardBus-to-PCI Expansion System?

A CardBus-to-PCI Expansion system allows you to add a number of full-length PCI slots to your laptop. A CardBus (or PCMCIA card) for the laptop connects to an external box with PCI slots via a cable (see diagram A). Peripherals that normally would reside in a desktop can now be used with the laptop. Now you can have the portability with your laptop without sacrificing the use of peripherals on you desktop.

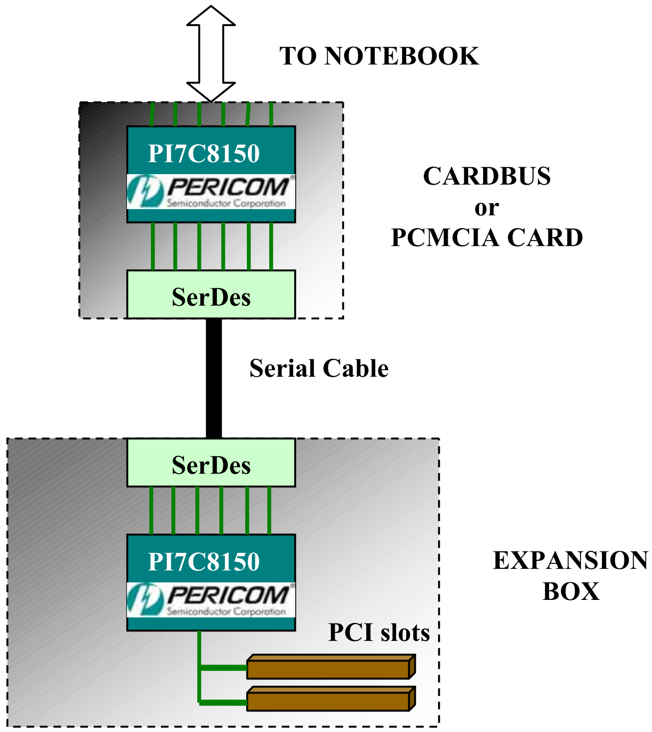
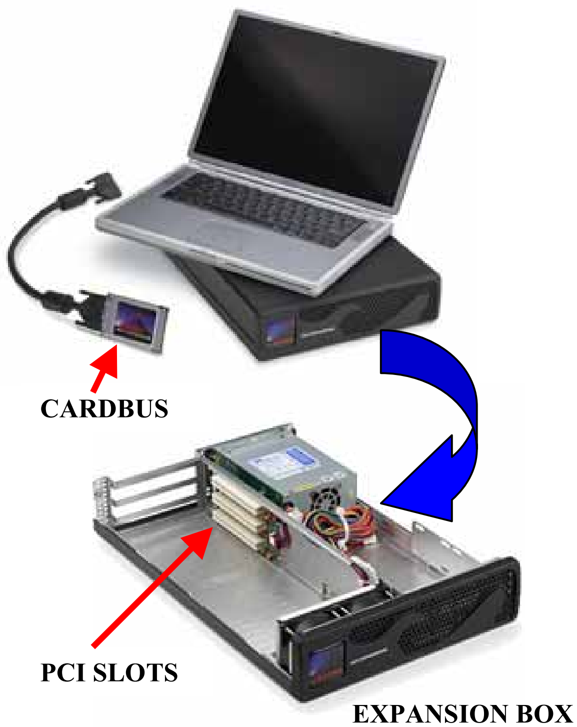


Diagram A



How is the PI7C8150ND used in the CardBus-to-PCI Expansion System?

The main function of the PCI Bridge is to allow for more devices or loads to be placed on the PCI bus. In this case, the bridge allows for two PCI slots to be added to the bus on the laptop. How does this work? Two bridges are used in the application. One resides on the CardBus and the other resides on the board with the additional PCI slots. To move the PCI signals/data across from the laptop to the expansion box, and vice versa, the data is first serialized off of the bridge on the CardBus so that it can go across the cable link. The data travels across the cable link and is then de-serialized on the other end. Finally, the data goes through the second bridge to the slots.

Why is the PI7C8150ND (256-pin PBGA) used instead of the PI7C8150MA (208-pin FQFP)?

The PBGA package is much thinner than the FQFP package. This is very important for residing on the CardBus, as the CardBus has a thickness limitation.

Key Features & Specifications

PI7C8150
PI7C8150 data sheet

- 32-bit / 66MHz and 33MHz primary and secondary buses
- Compliant with the following specifications
  - *PCI Local Bus Specification, Revision 2.2*
  - *PCI-to-PCI Bridge Architecture Specification, Revision 1.1*
  - *Advanced Configuration Power Interface* (ACPI) *Specification*
  - *PCI Power Management Specification, Revision 1.0*
- Two 128-byte FIFO's for delay transactions
- Two 128-byte FIFO's for posted memory transactions
- IEEE 1149.1 JTAG interface support
- Packages
  - 256-ball PBGA
  - *Available in a 208-pin FQFP also, but probably not suitable for this application because of the package thickness.*

Key Benefits

- Allows a system to add more slots or loads to a PCI bus by creating a secondary PCI bus.
- Allows an add-in card to have multiple devices

Competition

- Intel - SB21150AC and SB21150BC (EOL notice issued) http://www.intel.com/design/pcn/Networking/D0102658.pdf

Additional Information

- Data Brief on the web:
  - http://www.pericom.com/specs/PI7C8150.pdf
- Application Note on the web:
  - *Hardware Implementation Guide for PI7C8150 PCI-PCI Bridge* http://www.pericom.com/docs/AN55.pdf
- Product Presentation on the web:
  - http://www.pericom.com/misc/PI7C8150_CP.pdf

Product Status

- Samples: Today
- Production: Today

Contact Information

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