Issue No. 41

PEX 8508 Key Features

- 8-lane PCI Express switch
- Integrated SerDes
- Up to five configurable ports (x1, x2, x4)
- Cut through architecture with 150ns max latency
- Quality-of-Service (QoS) with up to 2 Virtual Channels/port
- Non-blocking switch fabric with full line rates
- Peer-to-peer switching and host centric data transfers
- SHPC r1.0 compliant Hot-Plug controller on all ports
- Dual-clocking support w/ SSC & Constant Frequency domains
- I^2C interface for configuration
- 19x19 mm^2 PBGA package

PEX 8508 Other Features

- Selectable Non-Transparent port
- PCIe Base Specification r1.1 compliant
- End-to-end CRC
- Poison bit support
- Advanced Error Reporting in addition to PCIe Baseline Error Reporting
- Hardware fixed and Round Robin Virtual Channel Port Arbitration
- Link power management states: L0, L0s, L1, L2/L3 Ready, & L3
- 256 byte Max Payload Size
- Lane and polarity reversal
- Configuration through strapping pins, I^2C, EEPROM, or host
- JTAG Boundary Scan

Application:

Embedded Platform Industrial Computing (EPIC)

PLX Product:

PEX 8508 – 8-Lane PCIe Switch

Key Benefit:

Increased Fan-out

PCI Express on EPIC Host Board and Expansion Modules

PCI technology usage is widespread in embedded systems including systems based on PC/104 and Embedded Board eXpandable (EBX) standards. PCI Express provides seamless migration for PCI-based systems without a fork-lift upgrade in operating systems, software, firmware and drivers. Another fairly new standard is the EPIC standard which solves the need for an industrial-quality single-board computer (SBC) fitting in size between PC/104-Plus and EBX standards. EPIC standard users will benefit from this compatibility as millions of systems are in deployment with PCI centric software.

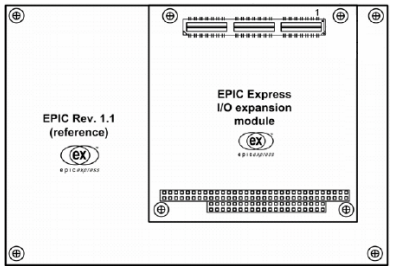

Figure 1

Figure 1 illustrates the EPIC host board and connectors for expansion modules and Figure 2 illustrates the use of stackable expansion modules.

New processors (CPUs) provide a PCIe interface, allowing high speed interconnect to endpoints or slots/connectors for expansion modules. However, most CPUs do not provide multiple PCIe ports, hence limiting connectivity to the endpoints and expansion slots. PCIe switches are available in different port counts from PLX to overcome this tedious limitation.

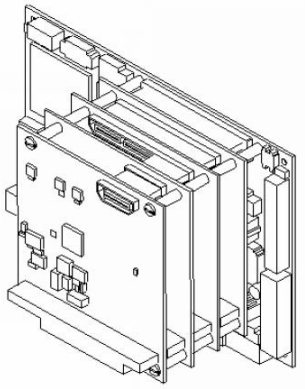

Figure 2

PCI Express switches can be deployed on the host-board for expanding CPU PCIe ports and on Express I/O expansion modules to fan out to more end-points.

Flexible & Versatile PCIe Switches

The flexibility and versatility of PLX switches allow designers to build to the needs of their application. The PEX 8508, based on PLX's second generation switch architecture, offers flexible ports that can be configured in any legal width up to x4 while providing high-performance, cut-through architecture (150ns max latency), hot-plug capability on every port, and Quality of Service (QoS) through two virtual channel support.

An application using the PEX 8508 switch in an EPIC based platform would use the x4 PCIe port on the CPU and fan out to four x1 ports to connect to the expansion module connector (see Figure 3).

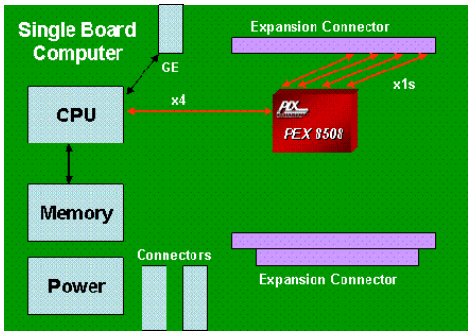

Figure 3

This would allow PCIe-based modules to connect to the CPU through a 2.5 Gb/s serial interface. Furthermore, each additional module may utilize PEX 8508's flexibility to expand the PCIe port to additional endpoints (EP) as illustrated in Figure 4.

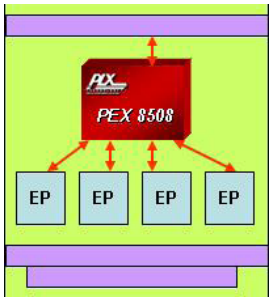

Figure 4

The PEX 8508 supports the use of up to four x1 downstream ports with a x4 PCIe upstream port. All PEX 8508 ports support SHPC compliant hot-plug functionality and flexible egress port arbitration. All downstream ports support peer-to-peer communication. The PEX 8508 helps in providing interoperability between motherboards and adapter cards through its five flexible ports by allowing any port to be the upstream port and dynamically adopting to the LVDS polarity (polarity reversal) and lane orientation (lane reversal) of the adapter.

Switches & Bridges Available Today!

PLX is shipping three PCIe bridges (PEX 8111, PEX 8114 and PEX 8311) and the PCIe switches listed below.

Device	Lanes	Ports	Availability
PEX 8532	32	8	In Production
PEX 8524	24	6	In Production
PEX 8516	16	4	In Production
PEX 8518	16	5	Sampling Now
PEX 8517	16	5	Sampling Now
PEX 8508	8	5	Sampling Now

More than Just Fan Out

- Cut-through architecture for increased performance
- Two Virtual Channels for QoS
- Non-transparent bridging for intelligent adapters, dual-host applications, and failover support

Design Tools & Documentation:

http://www.plxtech.com/products/expresslane/pex8508.asp
Data Book, App Notes, Product Brief, HSPICE/BSDL/IBIS Models, Development Kit

Contact Information
PLX Technology, Inc.
870 Maude Ave.
Sunnyvale, CA 94085 USA
Tel: 1-800-759-3735
Tel: 1-408-774-9060
Fax: 1-408-774-2169
Applications Support: Local FAE
Product Marketing:
Akber Kazmi akazmi@plxtech.com
Web Site: www.plxtech.com