

### PEX 8505 Key Features

- ◆ 5-lane PCI Express switch
- ◆ Up to 5 configurable ports (x1, x2)
- ◆ Cut-through architecture with 138ns latency
- ◆ One virtual channel per port
- ◆ Eight traffic classes per port
- ◆ WRR ingress port arbitration
- ◆ Non-blocking switch fabric
- ◆ Full line rate on all ports
- ◆ Peer-to-peer switching and host centric data transfers
- ◆ 3 standard hot-plug controllers supporting PCI SHPC r1.0
- ◆ Lane and polarity reversal
- ◆ Typical Power: 0.8W
- ◆ 15x15 mm<sup>2</sup> PBGA package

### PEX 8505 Other Features

- ◆ PCIe Base Specification r1.1 compliant
- ◆ PCI power management interface specification r1.2 compliant
- ◆ Transaction layer end-to-end CRC
- ◆ Poison bit support
- ◆ Basic and Advanced Error Reporting support
- ◆ Link power management states: L0, L0s, L1, L2/L3 Ready & L3
- ◆ Device states: D0 and D3hot
- ◆ 1KB Max Payload Size
- ◆ Fatal error (FATAL\_ERR#) signal (legacy SERR equivalent)
- ◆ INTA# signal
- ◆ 5 GPO signals
- ◆ Configuration through strapping pins, I<sup>2</sup>C, EEPROM, or host
- ◆ JTAG Boundary Scan

### Application:

*Multi-Function Printer*

### PLX Product:

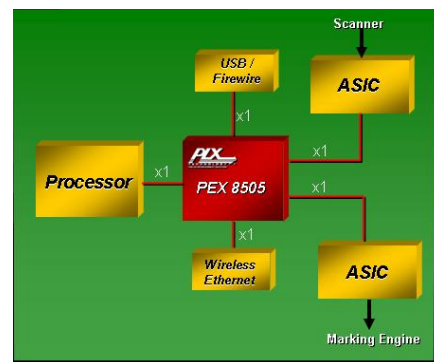
*PEX 8505 – 5-Lane 5-Port PCIe Switch*

### Key Benefit:

*PCIe Connectivity, Peer-to-Peer & Fan-Out*

## Embedded Systems Migrating to PCI Express

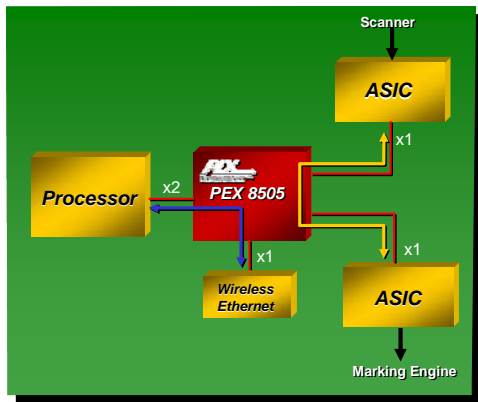
PCI Express, in addition to storage, server & graphics markets, is now being used in the embedded market. With processors from a number of companies integrating PCIe ports (in some cases no more than 1 PCIe port), printer applications are beginning to use PCIe. Customers prefer PCIe to replace legacy PCI due to the ease-of-design, higher throughput and lower costs. However, given the number of peripherals to be interconnected and the available number of ports in the processors, additional PCIe ports are required. A typical application, as shown in Figure 1, would involve a number of ASICs and other peripherals all needing to connect to the processor. With a strategic number of x1 ports, PEX 8505 would provide the connectivity to these ASICs and peripherals.



**Figure 1. Printer Block Diagram**

In this case, the PEX 8505 provides the right number of x1 PCIe ports for fan-out. Given the space constraints of such designs as well as the number of peripheral being interconnected, the PEX 8505 provides Five PCIe ports, one used to connect to the upstream processor and four used to connect to the downstream peripherals. At only 15 x 15 mm<sup>2</sup> and only 0.8W of power dissipation, the PEX 8505 provides flexibility and allows for space optimization. The PEX 8505 supports peer-to-peer transfers. A peer-to-peer transfer refers to the passing of packets between two ports with the processor out of the transfer path.

In other words, two downstream ports sending data to each other without the intervention of the processor. The switching between the downstream ports is handled and done by the PEX 8505. In this manner, the communication throughput between the scanner and the marking engine is maximized and the overall performance is optimized.



**Figure 2. Peer-to-peer path with x2 Upstream**

Figure 2 above shows multiple peer-to-peer flows occurring simultaneously. The first is between the scanner ASIC and the marking engine ASIC. The second flow between the processor and the wireless ethernet interface. Additionally, Figure 2 also shows a x2 upstream connection to the processor. The PEX 8505 allows the system to take advantage of the x2 interface available by the processor and thus increase the overall system performance.

### Flexible & Versatile PCIe Switches

The PEX 8505 offers flexible ports that can be configured up to x2 while providing high-performance, cut-through architecture (118ns latency), and Quality of Service (QoS).

### Switches & Bridges Available Today!

PLX is shipping four PCIe bridges (PEX 8111, PEX 8112, PEX 8114 and PEX 8311) and the PCIe switches listed here:  
[http://www.plxtech.com/pdf/Complete\\_Product\\_Listing.pdf](http://www.plxtech.com/pdf/Complete_Product_Listing.pdf)

### Design Tools & Documentation:

<http://www.plxtech.com/8505>  
 Data Book, App Notes, Product Brief, HRM, Models

### Contact Information

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