

PEX8603 Highlights

■ PEX8603 General Features

- 3-lane, 3-port PCIe Gen2 switch
 - Integrated 5.0 GT/s SerDes
- 10 x 10mm², 136-pin QFN package
- Typical Power: 0.7 Watts

■ PEX8603 Key Features

- **Standards Compliant**
 - PCI Express Base Specification, r2.1 (backwards compatible w/ PCIe 1.0a/1.1)
 - PCI Power Management Spec, r1.2
 - Microsoft Windows 7 Compliant
 - Dynamic SerDes speed control
- **High Performance**
 - Non-blocking switch fabric
 - Full line rate on all ports
 - Packet Cut-Thru with 250ns max packet latency (x1 to x1)
 - 256B Max Payload Size
- **Flexible Configuration**
 - Ports configurable as x1, x2
 - Registers configurable with strapping pins, EEPROM, I²C, or host software
 - Reference Clock Buffered Output signals for downstream ports
 - Lane and polarity reversal
 - Compatible with PCIe 1.0a PM
- **Quality of Service (QoS)**
 - Eight traffic classes per port
 - Round-robin source port arbitration
 - Relaxed PCI Ordering
- **Reliability, Availability, Serviceability**
 - visionPAK
 - Per Port Performance Monitoring
 - Per port payload & header counters
 - SerDes Eye Capture
 - Error Injection and Loopback
 - All ports Hot-Plug capable thru I²C (Hot-Plug Controller on every port)
 - Data Path parity
 - Memory (RAM) Error Correction signals
 - INTA# and FATAL_ERR#
 - Advanced Error Reporting
 - Port Status bits and GPIO available
 - Per port error diagnostics
 - JTAG AC/DC boundary scan
- **Power Management**
 - WAKE#, Beacon, Vaux support

Application:

Dual/Multi-Band Wireless Routers/Adapters

PLX Product:

PEX8603: 3-Lane, 3-Port PCIe Gen2 Switch

Key Benefit:

Low Power, Reference Clock Buffers, Small Package

In many households, the broadband internet bill is now as common as the cable TV or telephone bill. More and more consumers now subscribe to high speed Internet service for their home, and they expect their laptops and mobile devices to be able to connect and leverage the high speed service. The only thing standing in the way may be a legacy wireless router with only a single wireless radio and slower speed support.



Many wireless routers today are equipped with dual or multi-radios in order to support the bandwidth required from the numerous devices connected to the home wireless network. Smartphones, tablets, and notebooks are all vying for the wireless bandwidth to connect to the web. The most common routers support both 2.4 GHz and 5.0 GHz radios, and can boost performance by using each frequency to transfer specific types of data (e.g. file transfer, media streaming).

Many of today's WiFi radios are PCI Express (PCIe) based. Although many embedded processors used in routers have started to support PCIe as the high bandwidth interface, the support is limited to a x1 PCIe interface, which limits the number of WiFi radios that can be added.

Simple Fan-Out for Interfacing to High Speed Features

As a point-to-point protocol, a x1 PCIe interface limits the embedded processor to connect to a single device or endpoint. A PCIe switch is needed in this case to provide more IO connectivity for the dual-WiFi designs.

With the PEX8603, which is a 3-lane, 3-port PCIe Gen2 switch, easy fan-out can be achieved to allow many IOs to be connected to the limited PCIe x1 port from the embedded processor. Connecting one of the x1 ports as upstream to the embedded processor, the PEX8603 enables two more PCIe-based radios to be added to a dual WiFi design.

Dual-Band Wireless Adapter

In addition to the usage in router designs, the PEX8603 switch, with its small package and low power can be used in applications such as a dual-band wireless adapter.

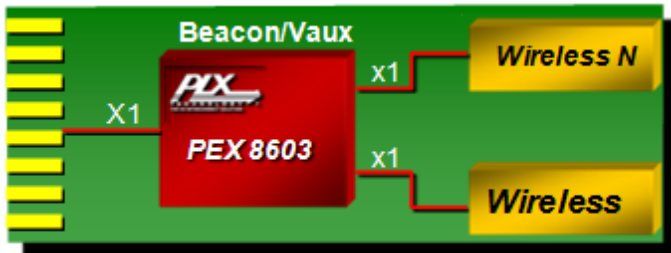


Figure 1 – Dual-band Wireless Adapter

With WAKE#/Beacon support integrated in the switch, the PEX8603 is well suited for low power consumer applications such as that described in Figure 1 of a dual-band wireless adapter.

Reference Clock Buffers Support

The PEX8603 supports two pairs of buffered, 100 MHz HCSL output clocks, one pair for each downstream port of the switch. The reference clock buffer pins will provide the PCIe reference clock for the downstream wireless radios in the wireless router/adapter designs.

Each clock output pair can be disabled by software or serial EEPROM when not in use, for additional power savings. This feature greatly reduces system BOM cost by eliminating the need for extra clock buffers on the PCB.

High Performance, Low Power, and Small Package Ideal for Consumer Designs

The PEX8603 boasts unsurpassed performance with its non-blocking architecture, capable of supporting both host-centric as well as true peer-to-peer traffic on its ports. The PEX8603 interfaces directly and seamlessly to embedded processors commonly used in consumer applications.

At 0.7W typical power, the PEX8603 provides low power capability that is fully compliant with the PCI Express power management specification. In addition, the SerDes physical links can be turned off when unused for even lower power.

The PEX8603 is one of the smallest PCIe Gen 2.0 switches in the market, at 10 x 10mm² QFN package, it is ideal for consumer applications such as the set-top box.

Development Tools & Custom Solutions

PLX offers hardware and software tools to enable rapid customer design activity. These tools consist of a hardware module (PEX8603-AA RDK), hardware documentation, and a Software Development Kit which are available at www.plxtech.com.

Rapid Development Kit (PEX8603-AA RDK)

- PEX8603 board with PCI Express configuration modules
- Reference design schematics for reduced time-to-market
- Product documentation & application notes

Software Development Kit (SDK)

- PLX's Software Development Kit is available for download at www.plxtech.com/sdk. The software development kit includes drivers, source code, and interfaces to aid in configuring and debugging the PEX8603.

Additional PLX Advantages

- Complete and easy to use Software Development Kit
- Schematic and Layout Design Reviews
- Signal integrity testing
- Regional support teams for fast time-to-market

Available on PLX Website:

Product Brief, Databook, Design-in Guidelines, Schematics, OrCAD symbols, Application Notes and more

- PEX8603 www.plxtech.com/8603