PERICOM®
Enabling Serial Connectivity

Application Note

PI7C9X20303SL / PI7C9X20404SL / PI7C9X20303UL
## Application Note for Multi-Radio Wireless Network Devices

Overview

The design of the Multi-Radio Wireless Network Devices is similar to combining several Wireless devices into one box. One of the most popular designs consists of a 2.4GHz and a 5GHz 802.11n Wireless LAN. The advantage of the design is the ability to utilize both the 2.4GHz and the less congested 5GHz wireless spectrum at full speed on both bands at the same time.

System designers can also opt to incorporate other combinations of wireless devices in their systems. Another application is to put an 802.11a/b/g and an 802.11n WLAN in one device to support compatibility with both of the standards. Other than putting together two wireless LANs, designers can use WiMAX, BT, or 3G wireless controller in conjunction with one WLAN device to achieve interoperability between multiple wireless protocols.

Pericom Solution

The embedded systems, including the multi-radio wireless networking devices, typically require components that are low-power, small footprints, and low-cost. The Pericom SlimLine^{TM} Packet Switches are designed with these considerations in mind. The SlimLine^{TM} Packet Switches are optimized to meet the requirements of this type of applications. The SlimLine^{TM} Packet Switches are able to provide fan-out capability from a SoC/CPU with a PCI Express port to two or three PCI Express endpoint devices such as WLAN, SATA controller etc. The SlimLine^{TM} family offers the lowest power-consuming PCI Express Switches in the industry. It is a cost-effective solution to the applications requiring high performance, low power consumption, and wider temperature range support.
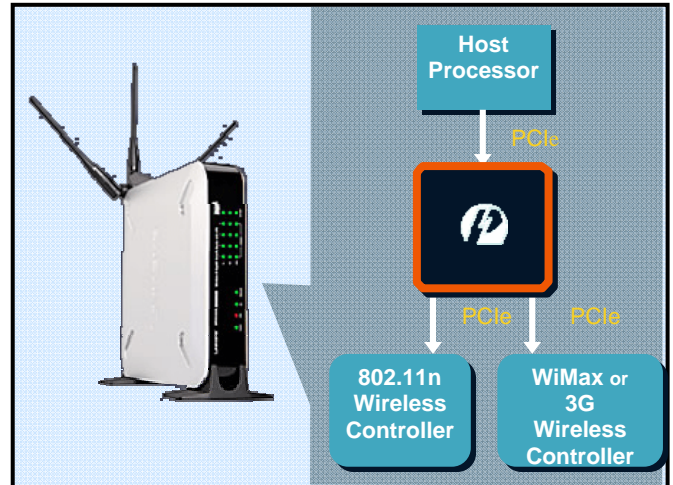
Application Example: Dual Radio WLAN Router
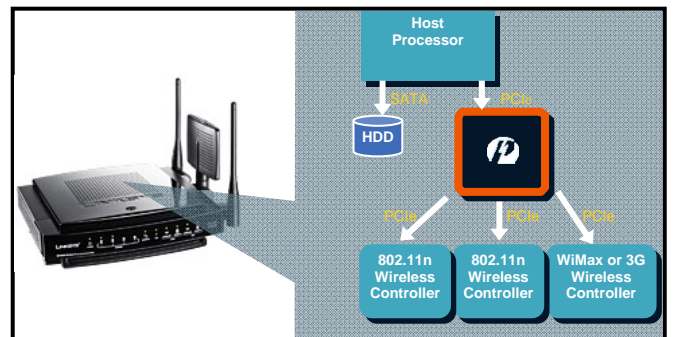
Application Example: Wireless NAS

Key Features and Specification

- PCI Express® Base Specification, Revision 1.1
- PCI Express CEM Specification, Revision 1.1
- PCI-to-PCI Bridge Architecture Specification, Rev 1.2
- Advanced Configuration Power Interface (ACPI) Specification
- Non-blocking full-wired switching capability at 12 Gbps when all 3 lanes are enabled
- Reliability, Availability and Serviceability
- Supports Data Poisoning and End-to-End CRC
- Advanced Error Reporting and Logging
- IEEE 1149.6 JTAG interface support
- Link Power Management
- Supports L0, L0s, L1, L2, L2/L3$_{Ready}$ and L3 link power state
- Active state power management for L0s and L1 state
- Beacon or Wake# support in L2 state
- Device State Power Management
- Supports D0, D3$_{Hot}$ and D3$_{Cold}$
- 3.3V Aux Power support in D3$_{Cold}$ power state
- Supports up to 256-byte maximum payload size
- Industrial Temperature Range -40° to 85°
- Package: Pb free and 100% Green
- Programmable Driver Current and De-Emphasis Level at each individual port
- 150ns typical latency for packet running through switch without blocking
- Supports "Cut-through"(Default) as well as "Store and Forward" mode for switching packets
- Supports up to 256-byte maximum payload size
- Advanced Power Savings
- Empty downstream ports are set to idle
- Clock to corresponding circuit is turned off when any port enters L1 or ASPM L1

PI7C9X20303SL

- 3-lane PCI Express Switch with 3 PCI Express ports
- Non-blocking full-wired switching capability at 12 Gbps when all 3 ports are enabled
- Low Power Dissipation: 0.36 W typical in normal mode, 0.21 W typical in standby mode
- 128-pin LQFP 14mm x 14mm
- The LQFP package's soldering temperature is lower than most of the standard BGA packages, which reduces the cost of the manufacture process.

PI7C9X20404SL

- 4-lane PCI Express Switch with 4 PCI Express ports
- Non-blocking full-wired switching capability at 16 Gbps when all 4 ports are enabled
- Low Power Dissipation: 0.36 W typical in normal mode, 0.21 W typical in standby mode
- 128-pin LQFP 14mm x 14mm
- The LQFP package's soldering temperature is lower than most of the standard BGA packages, which reduces the cost of the manufacture process.

PI7C9X20303UL

- 3-lane PCI Express Switch with 3 PCI Express ports
- Non-blocking full-wired switching capability at 12 Gbps when all 3 ports are enabled
- Low Power Dissipation: 0.3 W typical in normal mode, 0.15 W typical in standby mode
- 132-pin TQFN 10mm x 10mm

Product Status and Pricing

- Samples   Now
- Production   Now
- OEM retail pricing in 10Ku quantities:
    - PI7C9X20303SL $6.95
    - PI7C9X20404SL $7.95
    - PI7C9X20303UL $7.45

Additional Information

- Website
    - Datasheets, Production Briefs, Application Notes
- http://www.pericom.com/products/packetswitch/index.php

Contact Information

Please contact your local Pericom Sales Representative or franchised distributor. Contact list provided on the website:
http://www.pericom.com/partners/

Application Support

http://www.pericom.com/contact/support.php

SlimLine™ PCI Express Switch Product Family

Table 1: SlimLine™ PCI Express Switch Product Family

Part Number	PI7C9X20303SL	PI7C9X20404SL	PI7C9X20303UL
Ports	3	4	3
Lanes	3	4	3
Configuration	1 x1 Up, 2 x1 Down	1 x1 Up, 3 x1 Down	1 x1, Up 2 x1 Down
Power Typ. in L0 (mW)	360	360	300
Power Typ. In L1 (mW)	210	210	150
Advanced Power Saving	Yes	Yes	Yes
Latency Typ. (ns)	150	150	150
Bandwidth Mgmt (QoS)	Yes (API)	Yes (API)	Yes (API)
Signal Integrity	Programmable	Programmable	Programmable
Payload Size	256B	256B	256B
SMBus	Yes	Yes	Yes
Co-Footprint	Yes	Yes	N/A
GPIO	8	8	8
Industrial Temp (-40~+85°C)	Yes	Yes	Yes
Package	LQFP 128	LQFP 128	TQFN 132
Package Size (mm)	14x14	14x14	10x10

11/12/2008