GreenPacket^{TM} PCI Express® Packet Switch – Digital Video Surveillance System

Pericom Devices: PI7C9X20505GP and PI7C9X20508GP – 5-Port 5-Lane, and 5-Port 8-Lane PCI Express Packet Switch

Overview

A digital video surveillance system typically includes one or multiple cameras connected to a Video Surveillance Card. A Video Surveillance Card is a device that converts analog video streams to digital format. The hardware and software of the surveillance system then process the digital output from the Video Surveillance Card for display, storage, or other applications.

Many video surveillance systems are designed to integrate multiple cameras. Each camera supplies a separate analog feed to the Video Surveillance Card. The video decoder device converts the feed from analog form to digital format. Depending on the video decoder model, each decoder can decode 1 to 4 feeds simultaneously. If the number of the cameras required in a system exceeds the maximum that a video decoder can support, multiple video decoder devices are needed.

Pericom Solution

With more video decoder devices going from PCI interface to native PCIe®, the design of the video surveillance boards is evolving from PCIe Bridge to PCIe Packet Switch. In response to the trend, Pericom offers PCIe packet switches as a solution to integrate multiple PCIe video decoder devices in a single video surveillance card.

In a multiple video decoder configuration, a PCIe packet switch is used to fan out a single PCI Express port to connect to multiple video decoder devices. The block diagram shows a typical overview of a native PCIe Video Surveillance card. Pericom's Packet Switches can help expand the connectivity to accommodate the need for multiple video encoders.

4, 8 or 16 Channel VDEC's
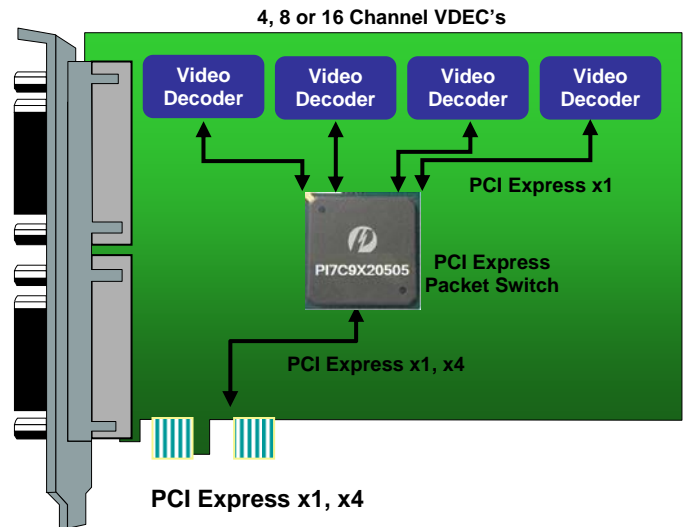
Key Features & Specification

- Supports "Cut-through"(Default) as well as "Store and Forward" mode for packet switching
- Peer-to-peer switching between any two downstream ports
- 150 ns typical latency for packet routed through Switch without blocking
- Strapped pins configurable with optional EEPROM
- Compliant with System Management (SM) Bus, Version 1.0
- Compliant with *PCI Express Base Specification Revision 1.1*
- Compliant with *PCI Express CEM Specification Revision 1.1*
- Compliant with *PCI-to-PCI Bridge Architecture Specification Revision 1.2*
- Compliant with *Advanced Configuration Power Interface (ACPI) Specification*
- Compliant with *PCI Standard Hot-Plug Controller (SHPC) and Subsystem Specification Revision 1.0*
- Reliability, Availability and Serviceability
  Supports Data Poisoning and End-to-End CRC
  Advanced Error Reporting and Logging
  Hot Plug support
  IEEE 1149.6 JTAG interface support

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- Advanced Power Saving
  - Empty downstream ports are set to idle state to minimize power consumption
  - Any downstream port enters L1 or ASPM L1, the clock to corresponding circuits is turned off
- Link Power Management
  - Supports L0, L0s, L1, L2, L2/L3Ready and L3 link power states
  - Active state power management for L0s and L1 states
  - Beacon or Wake# support in L2 state
- Device State Power Management
  - Supports D0, D3Hot and D3Cold device power states
  - 3.3V Aux Power support in D3Cold power state
- Port Arbitration: Round Robin (RR), Weighted RR and Time-based Weighted RR
- Extended Virtual Channel capability
  - Two Virtual Channels (VC) and Eight Traffic Class (TC) support
  - Disabled VCs' buffer is assigned to enabled VCs for resource sharing
  - Independent TC/VC mapping for each port
  - Provides VC arbitration selections: Strict Priority, Round Robin (RR) and Programmable Weighted RR
- Supports Isochronous Traffic
  - Isochronous traffic class mapped to VC1 only
  - Strict time based credit policing
- Supports up to 256-byte maximum payload size
- Programmable driver current and de-emphasis level at each individual port
- Industrial Temperature Range -40 to 85°C

PI7C9X20505GP

- 5-lane PCI Express Switch with 5 PCI Express ports
- Non-blocking full-wired switching capability at 20 Gbps when all 5 ports are enabled
- Low Power Dissipation at 0.75W in L0 normal mode
- 256-pin PBGA 17mm x 17mm package, 1.0 mm Ball Pitch

PI7C9X20508GP

- 8-lane PCI Express Switch with 5 PCI Express ports
- Non-blocking full-wired switching capability at 32 Gbps when all 5 ports are enabled
- Low Power Dissipation at 1.0W in L0 normal mode
- 256-pin PBGA 17mm x 17mm package, 1.0 mm Ball Pitch

Product Status and Pricing

- Samples   Now
- Production   Now
- OEM retail pricing in 10Ku quantities:
  - PI7C9X20505GP $9.5
  - PI7C9X20508GP $10.5

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

GreenPacket^{TM} PCI Express Switch Product Family

Part Number	PI7C9X20404GP	PI7C9X20505GP	PI7C9X20508GP
Ports	4	5	5
Lanes	4	5	8
Configuration	1 x1 Up, 3 x1 Down	1 x1 Up, 4 x1 Down	1 x1 or x4, Up 4 x1 Down
Power Typ. (W)	0.65	0.75	1.0
Advanced Power Saving	Yes	Yes	Yes
Virtual Channel (VC)	2	2	2
Traffic Class (TC)	8	8	8
Latency Typ. (ns)	150	150	150
Package	LFBGA 148	PBGA 256	PBGA 256
Package Size (mm)	12x12	17x17	17x17
Ball Pitch (mm)	0.8	1.0	1.0
Bandwidth Mgmt (QoS)	Yes (API)	Yes (API)	Yes (API)
Isochronous Traffic Support	Yes (VC1)	Yes (VC1)	Yes (VC1)
Signal Integrity	Programmable	Programmable	Programmable
Payload Size	256B	256B	256B
SMBus	Yes	Yes	Yes
Co-Footprint	N/A	Yes	Yes
GPIO	8	8	8