Tsi382™ PCIe® to PCI Bridge Product Brief

Features

General

- PCI Express to PCI bridge
- Transparent, Non-transparent and Opaque modes
- Efficient queuing and buffering for low latency and high throughput
- Compliant with the following specifications:
  - *PCI Express Base 1.1*
  - *PCI Express PCI/PCI-X Bridge 1.0*
  - *PCI-to-PCI Bridge Architecture 1.2*
  - *PCI Local Bus 3.0*
  - *PCI Bus Power Management Interface 1.2*

PCI Express

- x1 lane PCIe Interface
- Advanced error reporting capability
- End-to-end CRC check and generation
- Up to four outstanding memory reads
- ASPM L0 link state power management
- Legacy interrupt signaling and MSI interrupts
- Native Hot Plug support

PCI

- 32/64-bit addressing and 32-bit data
- Operates up to 66 MHz
- Up to eight outstanding memory reads
- PCI clock outputs for up to four devices
- Four external PCI masters supported through internal arbiter
- 3.3V PCI I/Os, 5V tolerant
- MSI generation and handling using interrupt and GPIO signals

Other Features

- Masquerade mode
- JTAG IEEE 1149.1, 1149.6
- Four GPIO pins and four interrupt pins that can generate MSIs
- D0, D3 hot, D3 cold power management state support
- 1.2V core power supply, 3.3V I/O
- No power sequencing constraints
- Packaging:
  - BGA: 144-pin, 10 x 10 mm, 0.8 mm ball pitch, Industrial operating temperature, with RoHS/Green and Eutectic packages
  - LQFP: 176-pin, 20 x 20 mm, Commercial operating temperature, RoHS compliant

Benefits

- Enhances system performance by delivering high throughput and low latency across bridge
- Simplifies system design by offering numerous programmable features

BGA Package

- Minimizes board space due to small footprint

LQFP Package

- Simplifies board layout by minimizing PCB layer requirements
- Reduces manufacturing and board costs

Device Overview

The IDT Tsi382 is a high-performance bus bridge that connects the PCI Express protocol to the PCI bus standard. The Tsi382's PCIe Interface supports a x1 lane configuration, which enables the bridge to offer throughput performance of up to 2.5 Gbps per transmit and receive direction.

The device's PCI Interface operates up to 66 MHz, and offers designers extensive flexibility by supporting three addressing modes: transparent, opaque, and non-transparent.

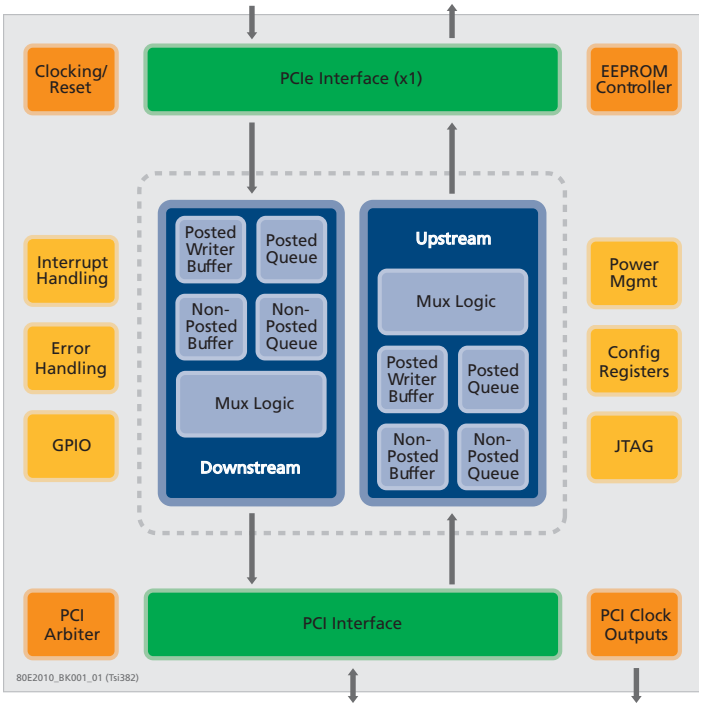

Figure 1 Block Diagram

Smallest Footprint

The Tsi382 BGA package has the smallest footprint of any PCIe-to-PCI device on the market. The device is offered in a 10 x 10 mm package with a standard 0.8 mm ball pitch, making it ideal for PCI ExpressCard applications or similar designs that have limited component space. For cost-sensitive applications, the Tsi382 is also available in a LQFP package.

In addition, by providing sufficient clock outputs for up to four PCI devices, board space is further reduced by eliminating the need for an external clock buffer.

Low Power Consumption

The Tsi382 has typical power consumption of less than 0.7W, and it incorporates advanced power management modes to minimize consumption during operation.

High Performance

In addition to low-latency operation, the Tsi382's superior queueing architecture and rich feature set allow designers to optimize their overall system performance. Features such as short-term caching also enable designers to tune the device's performance for different applications.

Transparent, Non-transparent, and Opaque Bridging

Transparent mode operation is available for efficient, flow through configurations. Non-transparent bridging also enables multi-host systems and is used in applications such as intelligent adapter cards. Opaque mode provides semi-transparent operation for multi-processor configurations and enhanced private device support.

Typical Applications

The Tsi382 is suited to applications that need to bridge PCIe to downstream PCI devices. Its flexibility, high performance, small footprint, and low power consumption, make it ideal for a wide range of applications, including:

- Digital video recorders
- ExpressCards for laptop computers
- Motherboards (PC, ultra-mobile PC, server, SBC, industrial PC)
- PC adapter cards (communications, graphics, imaging, and multimedia)
- Multifunction printers
- Line cards and NICs

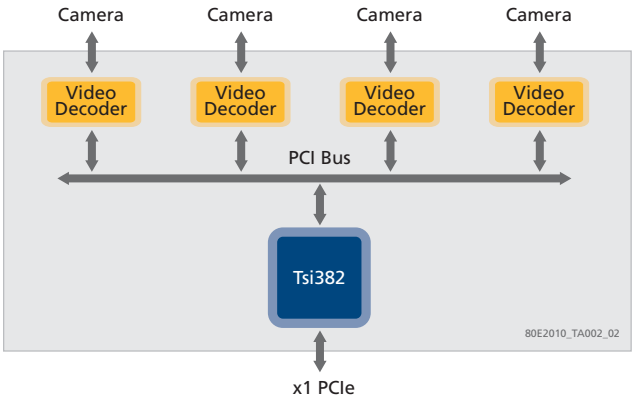

Figure 2 DVR Application

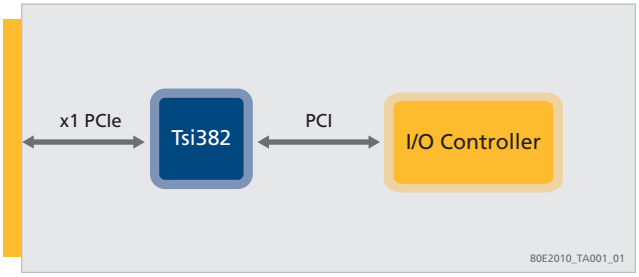

Figure 3 ExpressCard Application

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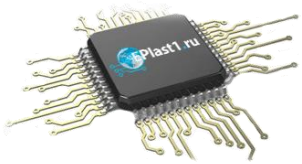

Как с нами связаться

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