



# 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.

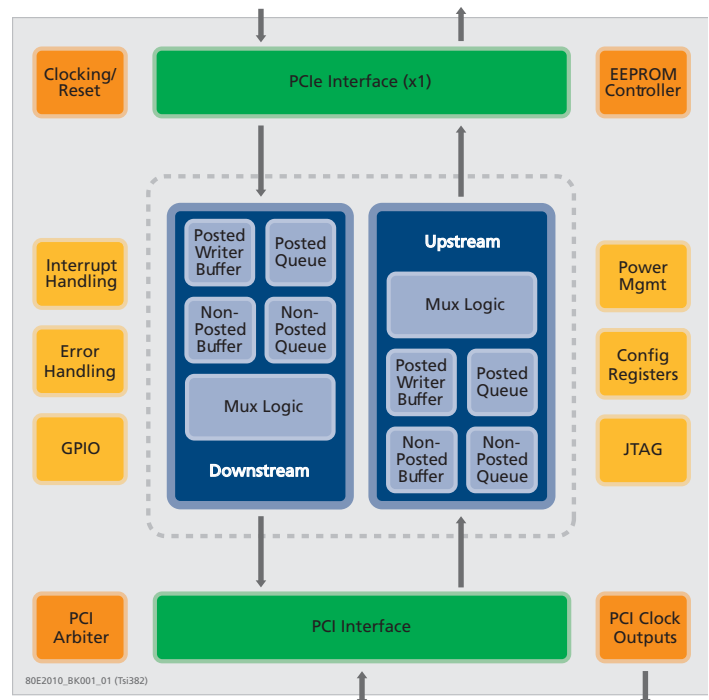


Figure 1 Block Diagram

### 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

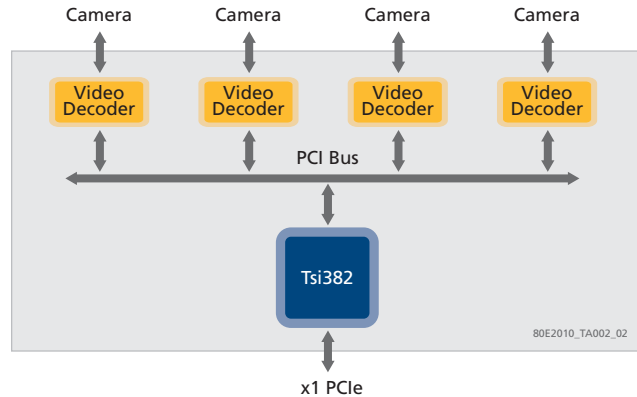


Figure 2 DVR Application

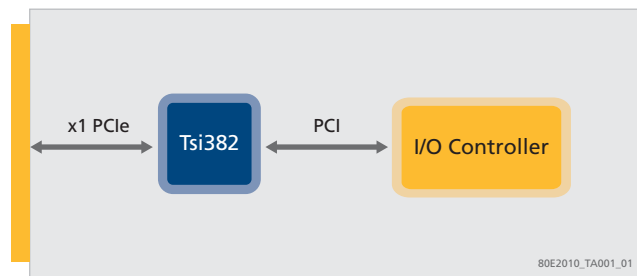


Figure 3 ExpressCard Application

NOT AN OFFER FOR SALE

The information presented herein is subject to a Non-Disclosure Agreement and is for planning purposes only. Nothing contained in this presentation, whether verbal or written, is intended as, or shall have the effect of, a sale or an offer for sale that creates a contractual power of acceptance.



**CORPORATE HEADQUARTERS**  
6024 Silver Creek Valley Road  
San Jose, CA 95138

**for SALES:**  
800-345-7015 or 408-284-8200  
fax: 408-284-2775  
www.idt.com

**for Tech Support:**  
email: [ssdhelp@idt.com](mailto:ssdhelp@idt.com)  
phone: 408-284-8208  
document: 80E2010\_FB001\_05

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,  
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: [ocean@oceanchips.ru](mailto:ocean@oceanchips.ru)

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А