PC Card Controllers

FEATURES

- **A 253-Terminal MicroStar BGA Ball-Grid Array (GVF/ZVF) Package**
- **2.5-V Core Logic and 3.3-V I/O with Universal PCI Interfaces Compatible with 3.3-V and 5-V PCI Signaling Environments**
- **Integrated Low-Dropout Voltage Regulator (LDO-VR) Eliminates the Need for an External 2.5-V Power Supply**
- **Mix-and-Match 5-V/3.3-V 16-Bit PC Cards and 3.3-V CardBus Cards**
- **A Single PC Card or CardBus Slot with Hot Insertion and Removal**
- **Parallel Interface to TI TPS2211A Single-Slot PC Card Power Switch**
- **Burst Transfers to Maximize Data Throughput with CardBus Cards**
- **Interrupt Configurations: Parallel PCI, Serialized PCI, Parallel ISA, and Serialized ISA**
- **Serial EEPROM Interface for Loading Subsystem ID, Subsystem Vendor ID, and other Configuration Registers**
- **Pipelined Architecture for Greater Than 130-Mbps Throughput from CardBus-to-PCI and from PCI-to-CardBus**
- **Up to Five General-Purpose I/Os**
- **Programmable Output Select for $\overline{\text{CLKRUN}}$**
- **Five PCI Memory Windows and Two I/O Windows Available for the 16-Bit Interface**
- **Two I/O Windows and Two Memory Windows Available to the CardBus Socket**
- **Exchangeable-Card-Architecture- (ExCA-) Compatible Registers Are Mapped in Memory and I/O Space**
- **Intel™ 82365SL-DF and 82365SL Register Compatible**
- **Ring Indicate, $\overline{\text{SUSPEND}}$, PCI $\overline{\text{CLKRUN}}$, and CardBus $\overline{\text{CCLKRUN}}$**
- **Socket Activity LED Terminal**
- **PCI Bus Lock ($\overline{\text{LOCK}}$)**
- **Internal Ring Oscillator**

DESCRIPTION

The Texas Instruments PCI1510R device, a 144-terminal, 209-terminal, or 253-terminal single-slot CardBus controller designed to meet the *PCI Bus Power Management Interface Specification for PCI to CardBus Bridges*, is an ultralow-power high-performance PCI-to-CardBus controller that supports a single PC card socket compliant with the *PC Card Standard* (rev. 7.2). The controller provides features that make it the best choice for bridging between PCI and PC Cards in both notebook and desktop computers. The *PC Card Standard* retains the 16-bit PC Card specification defined in the *PCI Local Bus Specification* and defines the 32-bit PC Card, CardBus, capable of full 32-bit data transfers at 33 MHz. The controller supports both 16-bit and CardBus PC Cards, powered at 5 V or 3.3 V, as required.

The controller is compliant with the *PCI Local Bus Specification*, and its PCI interface can act as either a PCI master device or a PCI slave device. The PCI bus mastering is initiated during CardBus PC Card bridging transactions. The controller is also compliant with *PCI Bus Power Management Interface Specification* (rev. 1.1).

All card signals are internally buffered to allow hot insertion and removal without external buffering. The controller is register-compatible with the Intel 82365SL-DF and 82365SL ExCA controllers. The controller internal data path logic allows the host to access 8-, 16-, and 32-bit cards using full 32-bit PCI cycles for maximum performance. Independent buffering and a pipeline architecture provide an unsurpassed performance level with sustained bursting. The controller can also be programmed to accept fast posted writes to improve system-bus utilization.

Multiple system-interrupt signaling options are provided, including parallel PCI, parallel ISA, serialized ISA, and serialized PCI. Furthermore, general-purpose inputs and outputs are provided for the board designer to implement sideband functions. Many other features designed into the controller, such as a socket activity light-emitting diode (LED) outputs, are discussed in detail throughout this document.

An advanced complementary metal-oxide semiconductor (CMOS) process achieves low system power consumption while operating at PCI clock rates up to 33 MHz. Several low-power modes enable the host power management system to further reduce power consumption.

NOTE:

This product is for high-volume PC applications only. For a complete datasheet or more information contact support@ti.com.

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)
PCI1510RGVF	OBSOLETE	NFBGA	GVF	253		TBD	Call TI	Call TI
PCI1510RZVF	OBSOLETE	NFBGA	ZVF	253		TBD	Call TI	Call TI

(1) The marketing status values are defined as follows:
ACTIVE: Product device recommended for new designs.
LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.
NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.
PREVIEW: Device has been announced but is not in production. Samples may or may not be available.
OBSOLETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check http://www.ti.com/productcontent for the latest availability information and additional product content details.
TBD: The Pb-Free/Green conversion plan has not been defined.
Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.
Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.
Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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