

## PC Card Controllers

### FEATURES

- Fully compatible with the Intel™ 430TX (Mobile Triton II) chipset
- A 208-pin Low-Profile QFP (PDV), 209-terminal MicroStar BGA™ package (GHK), or the 209-terminal lead-free (Pb, atomic number 82) MicroStar BGA™ package (ZHK).
- 3.3-V core logic with universal PCI interfaces compatible with 3.3-V and 5-V PCI signaling environments
- Mix-and-match 5-V/3.3-V 16-bit PC Cards and 3.3-V CardBus Cards
- Two PC Card or CardBus slots with hot insertion and removal
- Uses serial interface to TI™ TPS2206/2216 dual-slot PC Card power switch
- Burst transfers to maximize data throughput with CardBus Cards
- Parallel PCI interrupts, parallel ISA IRQ and parallel PCI interrupts, serial ISA IRQ with parallel PCI interrupts, and serial ISA IRQ and PCI interrupts
- Serial EEPROM interface for loading subsystem ID and subsystem vendor ID
- Pipelined architecture allows greater than 130M bps throughput from CardBus-to-PCI and from PCI-to-CardBus
- Up to five general-purpose I/Os
- Programmable output select for  $\overline{\text{CLKRUN}}$
- Multifunction PCI device with separate configuration space for each socket
- Five PCI memory windows and two I/O windows available for each R2 socket
- Two I/O windows and two memory windows available to each CardBus socket
- Exchangeable Card Architecture (ExCA) compatible registers are mapped in memory and I/O space
- Intel 82365SL-DF and 82365SL register compatible
- Distributed DMA (DDMA) and PC/PCI DMA
- 16-Bit DMA on both PC Card sockets
- Ring indicate,  $\overline{\text{SUSPEND}}$ , PCI  $\overline{\text{CLKRUN}}$ , and CardBus  $\overline{\text{CCLKRUN}}$
- Socket activity LED pins
- PCI Bus Lock ( $\overline{\text{LOCK}}$ )
- Advanced Submicron, Low-Power CMOS Technology
- Internal Ring Oscillator

### DESCRIPTION

The TI PCI1420, the industry's first 208-pin controller to meet the *PCI Bus Power Management Interface Specification for PCI to CardBus Bridges*, is a high-performance PCI-to-CardBus controller that supports two independent card sockets compliant with the *1997 PC Card Standard*. The PCI1420 provides features that make it the best choice for bridging between PCI and PC Cards in both notebook and desktop computers. The *1997 PC Card Standard* retains the 16-bit PC Card specification defined in *PCI Local Bus Specification* and defines the new 32-bit PC Card, CardBus, capable of full 32-bit data transfers at 33 MHz. The PCI1420 supports any combination of 16-bit and CardBus PC Cards in the two sockets, powered at 5 V or 3.3 V, as required.

The PCI1420 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 16-bit PC Card DMA transfers or CardBus PC Card bridging transactions. The PCI1420 is also compliant with the latest *PCI Bus Power Management Interface Specification*.

All card signals are internally buffered to allow hot insertion and removal without external buffering. The PCI1420 is register compatible with the Intel 82365SL-DF and 82365SL ExCA controllers. The PCI1420 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 PCI1420 can also be programmed to accept fast posted writes to improve system-bus utilization.



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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 PCI1420, such as socket activity light-emitting diode (LED) outputs, are discussed in detail throughout the design specification.

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](mailto:support@ti.com).

**PACKAGING INFORMATION**

Orderable Device	Status <sup>(1)</sup>	Package Type	Package Drawing	Pins	Package Qty	Eco Plan <sup>(2)</sup>	Lead/Ball Finish	MSL Peak Temp <sup>(3)</sup>
PCI1420GHK	NRND	BGA MI CROSTAR	GHK	209	90	TBD	SNPB	Level-3-220C-168 HR
PCI1420PDV	NRND	LQFP	PDV	208	36	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
PCI1420PDVG4	NRND	LQFP	PDV	208	36	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
PCI1420ZHK	NRND	BGA MI CROSTAR	ZHK	209	90	Green (RoHS & no Sb/Br)	SNAGCU	Level-3-260C-168 HR

<sup>(1)</sup> 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.

<sup>(2)</sup> 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)

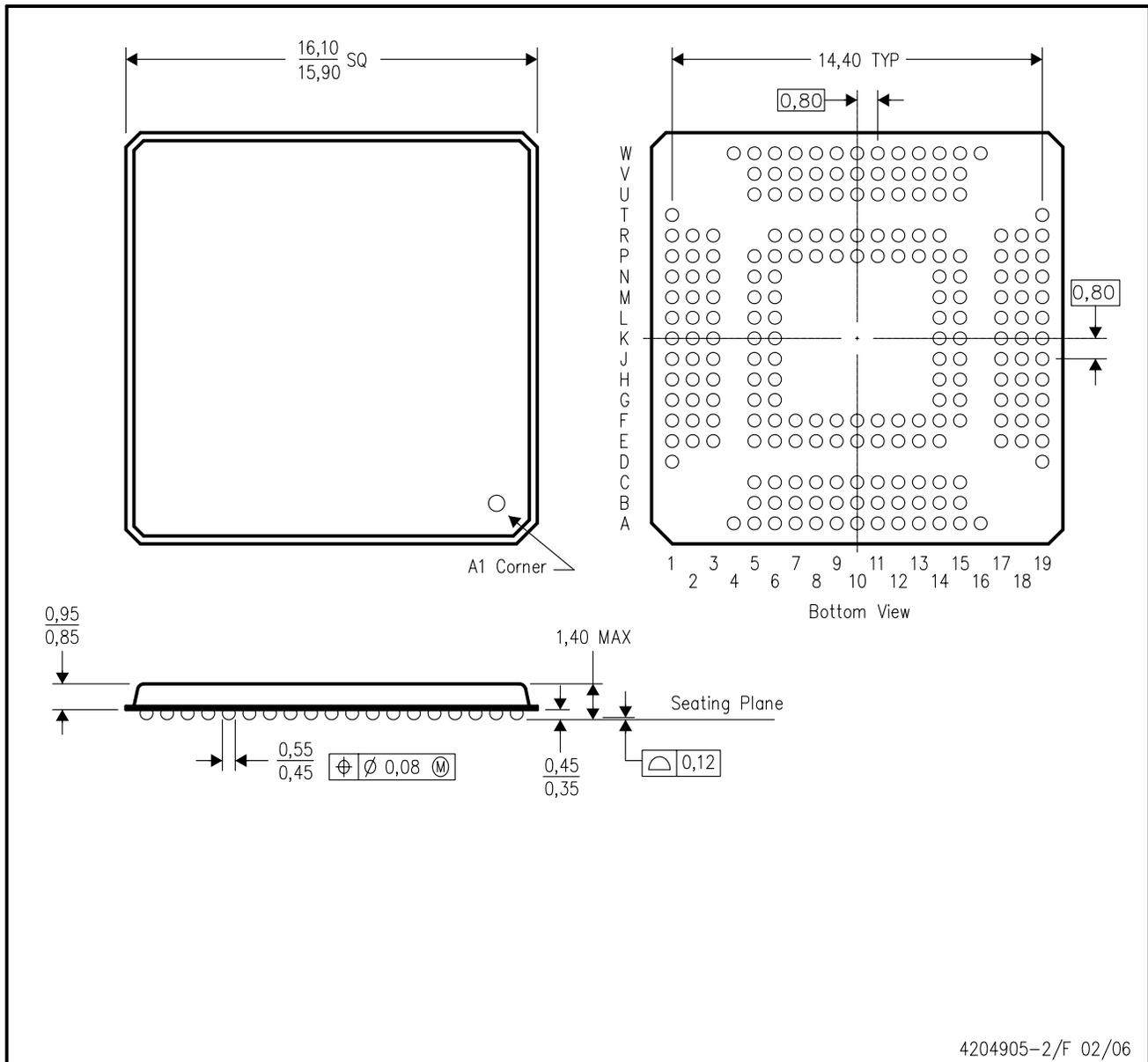
<sup>(3)</sup> MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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ZHK (S-PBGA-N209)

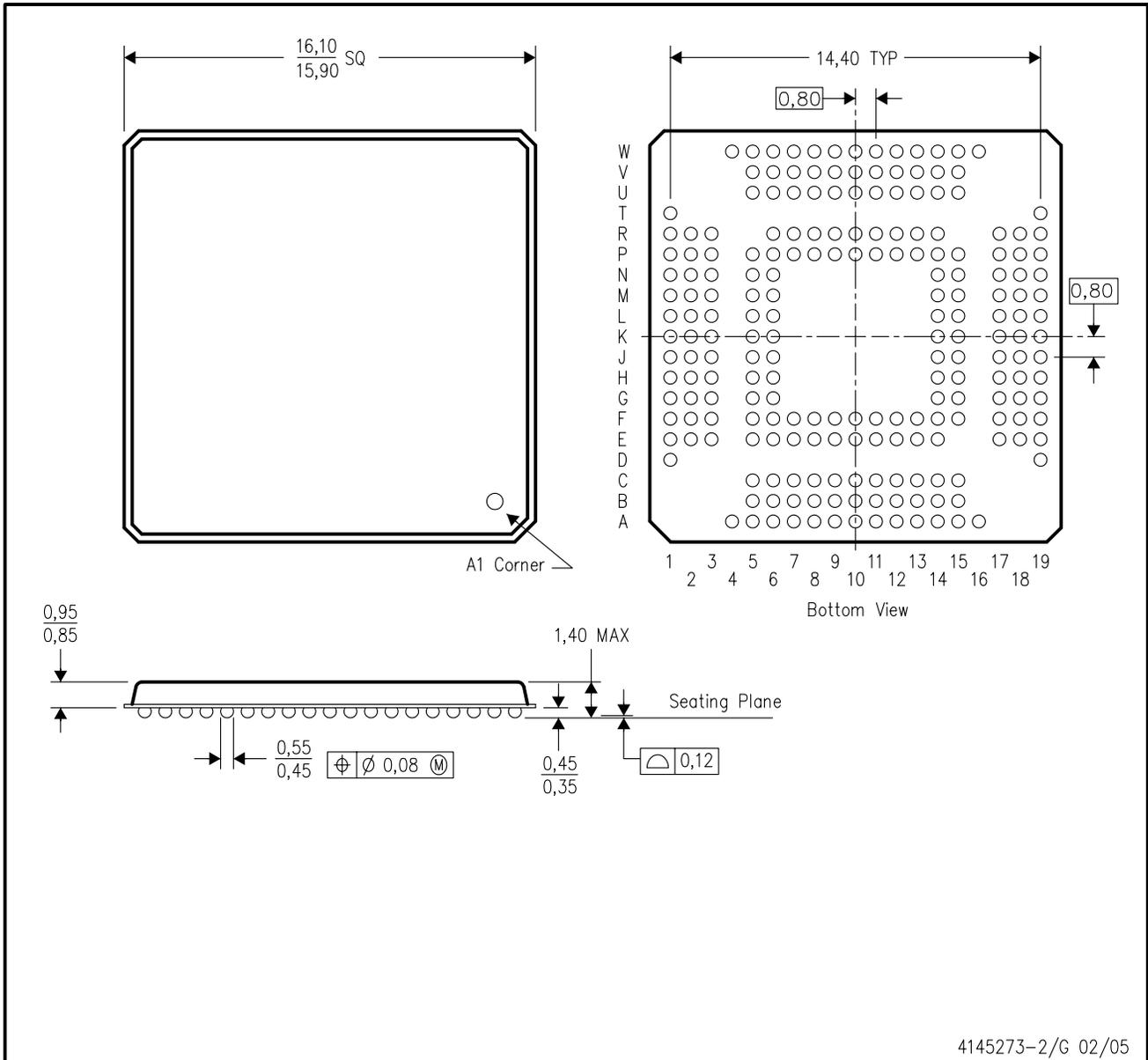
PLASTIC BALL GRID ARRAY



- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. This is a lead-free solder ball design.

GHK (S-PBGA-N209)

PLASTIC BALL GRID ARRAY



- NOTES:
- A. All linear dimensions are in millimeters.
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