

Dual-Socket PC Card and UltraMedia Controller

FEATURES

- *PC Card Standard 8.0* compliant
- *PCI Bus Power Management Interface Specification 1.1* compliant
- *Advanced Configuration and Power Interface Specification 1.0* compliant
- *PCI Local Bus Specification Revision 2.2* compliant
- *PC 98/99* compliant
- Has integrated voltage regulator to use 1.8-V core voltage
- Compliant with the *PCI Bus Interface Specification for PCI-to-CardBus Bridges*
- Advanced filtering on card detect lines provides 90 microseconds of noise immunity.
- Programmable D3 status terminal
- 1.8-V core logic and 3.3-V I/O cells with internal voltage regulator to generate 1.8-V core V_{CC}
- 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
- Supports two PC Card or CardBus slots with hot insertion and removal
- Uses serial interface to TI TPS2226 and TI TPS2228 dual power switch
- Supports 132-Mbps burst transfers to maximize data throughput on both the PCI bus and the CardBus bus
- Supports serialized IRQ with PCI interrupts
- 13 programmable multifunction terminals
- Interrupt modes supported: serial ISA/serial PCI, serial ISA/parallel PCI, parallel PCI only
- Serial EEPROM interface for loading subsystem ID and subsystem vendor ID
- Supports external zoomed video
- Dedicated terminal for PCI CLKRUN
- Four general-purpose event registers
- Multifunction PCI device with separate configuration space for each socket
- Five PCI memory windows and two I/O windows available to each 16-bit PC Card socket
- Two I/O windows and two memory windows available to each CardBus socket
- ExCA-compatible registers are mapped in memory or I/O space
- Intel™ 82365SL–DF register compatible
- Supports ring indicate, suspend, and PCI clock run
- Advanced submicron, low-power CMOS technology
- Provides VGA/palette memory and I/O, and subtractive decoding options
- LED activity terminals
- Supports PCI bus lock (LOCK)

DESCRIPTION

The Texas Instruments PCI1620 is an integrated dual-socket PC Card controller, FlashMedia™ controller (SmartMedia™ Card, MultiMediaCard, SD Card, Memory Stick™ card) and Smart Card controller.

The PCI1620 UltraMedia™ controller is a three-function PCI device compliant with *PCI Local Bus Specification 2.2*. Functions 0 and 1 provide two independent PC Card socket controllers compliant with *PC Card Standard 8.0*. Function 2 is the interface to load the PCI1620 program RAM with firmware. The PCI1620 provides features that make it ideal for bridging between the PCI bus and PC Cards, and supports any combination of 16-bit, CardBus, and UltraMedia PC Cards in the two sockets, powered at 5 V, 3.3 V, or 1.8 V as required.



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

UltraMedia is a trademark of Texas Instruments.

Intel is a trademark of Intel Corporation.

SmartMedia is a trademark of Kabushiki Kaisha Toshiba Toshiba Corporation, Japan.

Memory Stick is a trademark of Sony Kabushiki Kaisha TA Sony Corporation, Japan.

UltraMedia cards that comply with the latest PCMCIA standard provide for very low-cost flash media and Smart Card adapters, because the control logic is integrated into the PCI1620. The PCI1620 supports a passive 4-in-1 adapter, as well as active PC Card-style Flash media and Smart Card adapters.

No PCMCIA card or socket service software changes are required to move systems from an existing CardBus socket controller to the PCI1620. The FlashMedia UltraMedia applications use existing host ATA drivers, and Texas Instruments provides a qualified Smart Card driver for UltraMedia-based Smart Card adapters. The PCI1620 is register compatible with the Intel 82365SL–DF ExCA controller and implements the host interface defined in the *PC Card Standard*. The PCI1620 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 the pipeline architecture provide a high performance level with sustained bursting. The PCI1620 can be programmed to accept posted writes to improve bus utilization.

Various implementation-specific functions and general-purpose inputs and outputs are provided through seven multifunction terminals. These terminals present a system with options for PCI LOCK, serial and parallel interrupts, PC Card activity indicator LEDs, and other platform-specific signals. ACPI-compliant general-purpose events may be programmed and controlled through the multifunction terminals, and an ACPI-compliant programming interface is included for the general-purpose inputs and outputs.

The PCI1620 is compliant with *PCI Bus Power Management Interface Specification 1.1*, and provides several low-power modes, which enable the host power system to further reduce power consumption. The PCI1620 also has a three-terminal serial interface compatible with both the TI TPS2226 and TPS2228 power switches.

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⁾
PCI1620GHK	OBSOLETE	BGA MI CROSTAR	GHK	209		TBD	Call TI	Call TI
PCI1620PDV	OBSOLETE	LQFP	PDV	208		TBD	Call TI	Call TI
PCI1620ZHK	OBSOLETE	BGA MI CROSTAR	ZHK	209		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)

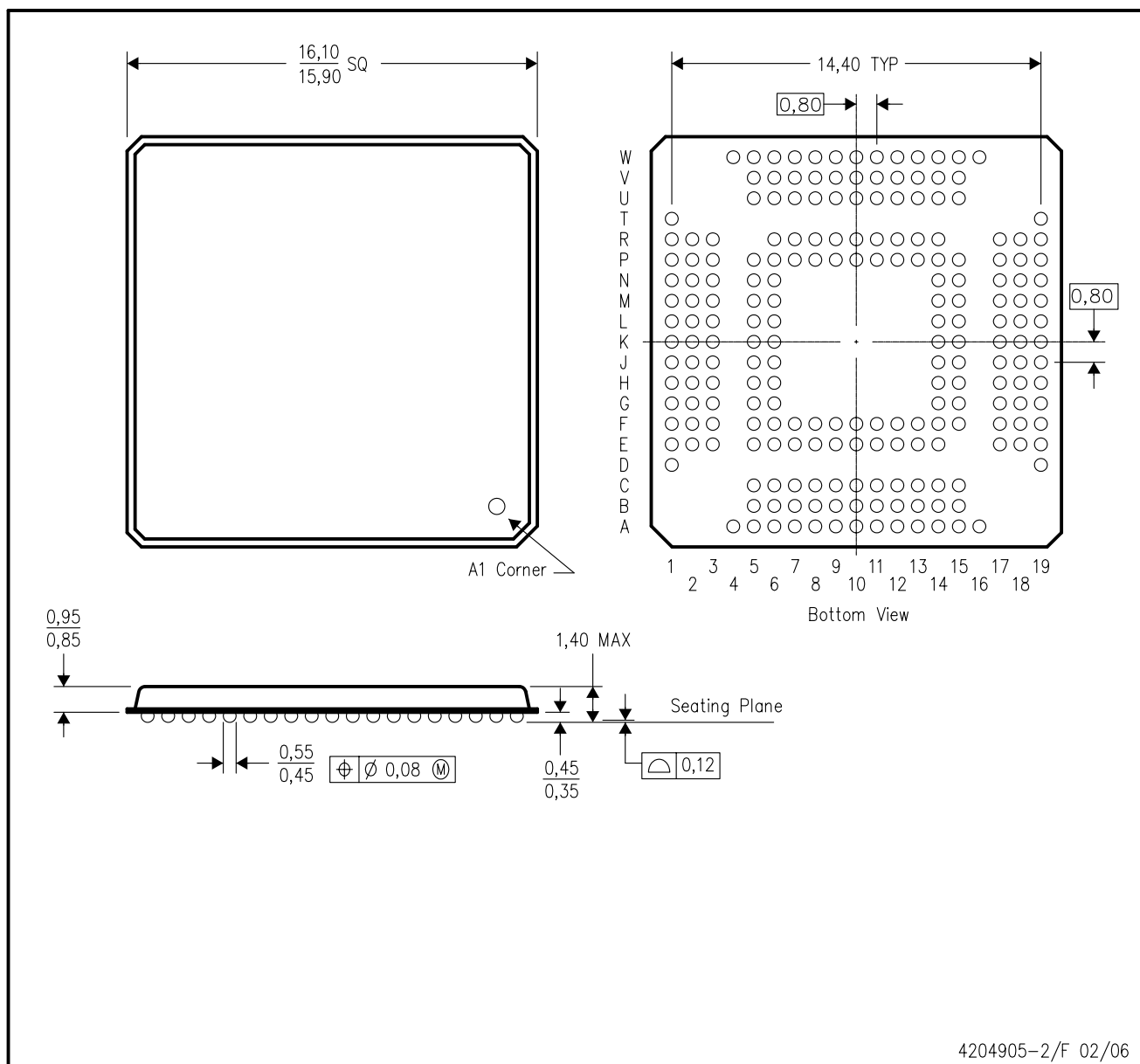
⁽³⁾ MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

Important Information and Disclaimer: The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

ZHK (S-PBGA-N209)

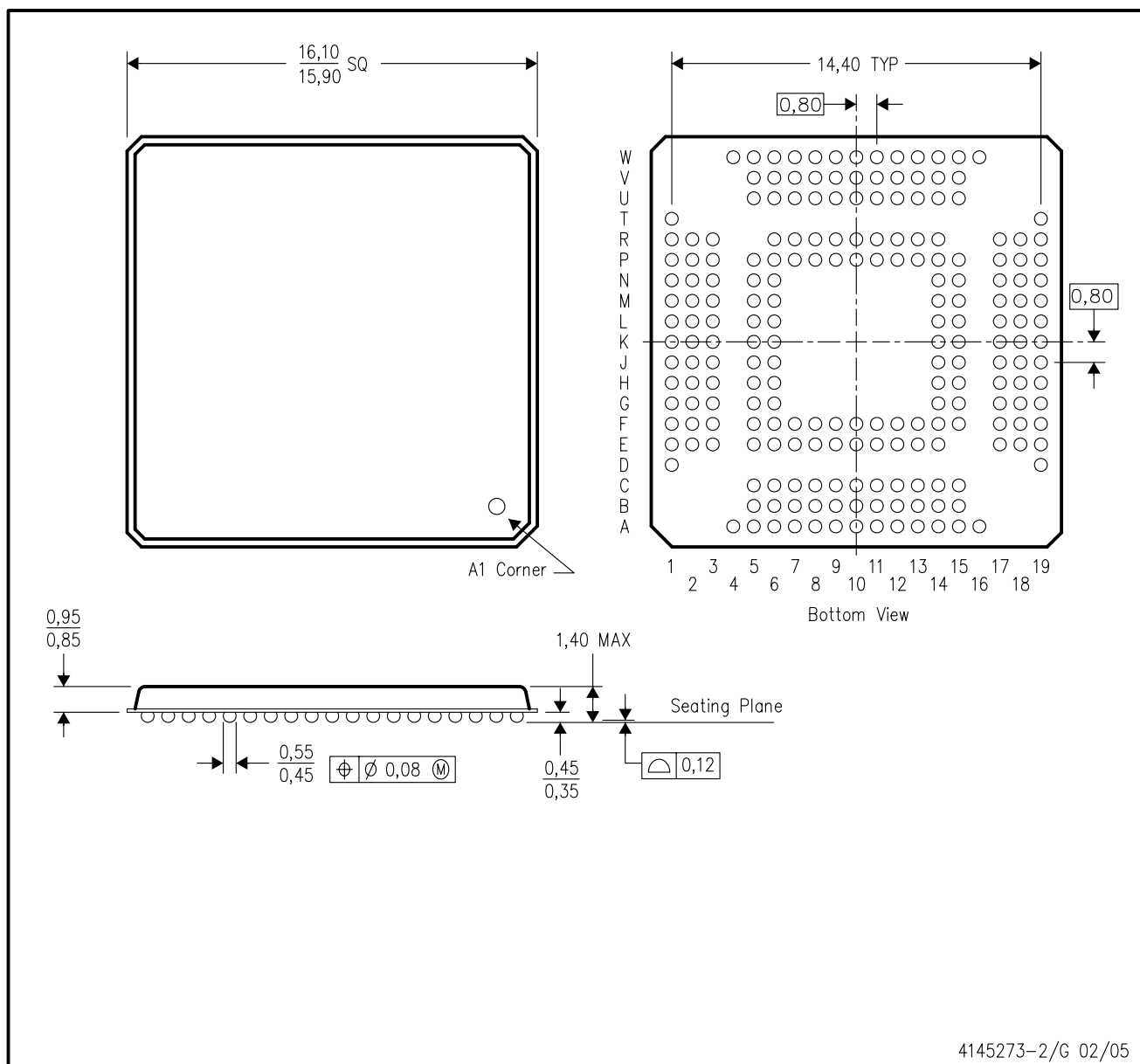
PLASTIC BALL GRID ARRAY



- 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.
 - B. This drawing is subject to change without notice.

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products

Amplifiers	amplifier.ti.com
Data Converters	dataconverter.ti.com
DSP	dsp.ti.com
Clocks and Timers	www.ti.com/clocks
Interface	interface.ti.com
Logic	logic.ti.com
Power Mgmt	power.ti.com
Microcontrollers	microcontroller.ti.com
RFID	www.ti-rfid.com
RF/IF and ZigBee® Solutions	www.ti.com/lprf

Applications

Audio	www.ti.com/audio
Automotive	www.ti.com/automotive
Broadband	www.ti.com/broadband
Digital Control	www.ti.com/digitalcontrol
Medical	www.ti.com/medical
Military	www.ti.com/military
Optical Networking	www.ti.com/opticalnetwork
Security	www.ti.com/security
Telephony	www.ti.com/telephony
Video & Imaging	www.ti.com/video
Wireless	www.ti.com/wireless

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2008, Texas Instruments Incorporated