



Intel® Pentium® 4 Processor for Embedded Computing

Product Overview

Intel® Pentium® 4 processor-based platforms are ideal for advanced, highly differentiated embedded solutions including communications, interactive client and industrial automation applications. An advanced microarchitecture and clock speeds of 2.0 GHz, 2.4 GHz, 2.6 GHz, and 2.8 GHz enable developers to meet embedded computing demands, today and in the future. While incorporating new features and improvements, the Intel Pentium 4 processor remains software-compatible with previous members of the Intel® microprocessor family.

The Intel Pentium 4 processor is validated with the following chipsets to create platforms with excellent price and performance for embedded computing segments.

- Intel® 875P chipset supports outstanding performance, featuring dual-channel DDR 266/333/400 with ECC, 4 GB max memory, AGP 8x, Communications Streaming Architecture (CSA), and four PCI-X* slot devices
- Intel® 865G chipset supports dual-channel DDR 266/333/400 main memory, 4 GB max memory, integrated graphics controller with Intel® Extreme Graphics 2 Technology, and AGP 8x graphics interface
- Intel® 852GME chipset features up to 2 GB of DDR 266/333 system memory, providing an optimized integrated graphics solution and support for Intel Extreme Graphics 2 Technology
- Intel® 845 chipset family provides up to 2 GB DDR 200/266/333' memory and configurable, optional ECC operation (Intel® 845 and Intel® 845E chipsets)

The scalable Intel Pentium 4 processor-based platform can help reduce the total cost of ownership for a new generation of advanced, highly differentiated embedded products by providing



performance headroom, robust I/O, scalability and quality. Rapid platform development is supported by the latest operating systems, applications and Intel® architecture development tools. In addition, Intel offers validated Pentium 4 processor-based reference designs to rapidly meet unique product application requirements.

Product Highlights

- Available in the following configurations:
 - 2.0 GHz and 2.6 GHz with a 400 MHz processor system bus delivering 3.2 GB of data per second
 - 2.4 GHz and 2.8 GHz with a 533 MHz processor system bus delivering 4.3 GB of data per second into and out of the processor
- Features Intel NetBurst® microarchitecture, providing software and architectural scalability for future performance processors:
 - Hyper-pipelined technology doubles the pipeline depth currently available on Intel® Pentium® III processors
 - Level 1 cache, which includes 8 KB data cache, as well as an execution trace cache that stores up to 12 K decoded micro-ops
 - Rapid execution engine, which includes two Arithmetic Logic Units (ALUs), clocked at twice the core processor frequency

Product Highlights (continued)

- 512 KB Level 2 Advanced Transfer Cache (ATC) delivers a high data throughput channel between the Level 2 cache and the processor core. Features of the ATC include:
 - Non-blocking, full-speed, on-die Level 2 cache
 - 8-way set associativity
 - Data clocked into and out of the cache every clock cycle
- Deep, out-of-order speculative Advanced Dynamic Execution engine
- Enhanced floating-point and multi-media unit expands floating-point registers to a full 128-bit and adds an additional register for data movement
- Internet Streaming SIMD Extensions 2 (SSE2) adds 144 new instructions
- Data Prefetch Logic functionality anticipates the data needed by an application and pre-loads it into the ATC, further increasing processor and application performance
- Validated with the Intel 875P chipset, Intel 865G chipset, Intel 852GME chipset, Intel 845GV chipset, Intel 845E chipset, and Intel 845 chipset
- Manufactured on 0.13μ process technology
- Support for uni-processor designs
- Fully compatible with existing Intel architecture-based software
- FC-PGA2 478-pin package
- Embedded lifecycle support
- Along with a strong ecosystem of hardware and software vendors, including members of the Intel® Communications Alliance (intel.com/go/ica), Intel helps cost-effectively meet development challenges and speed time-to-market

Intel® Pentium® 4 Processor for Embedded Computing

Product Number	Core Speed	System Bus Frequency	L2 Cache	Thermal Design Power	Voltage ²	Tcase	Package
RK80532PE072512	2.8 GHz	533 MHz	512 KB	68.4 W	1.525 V	5-75° C	FC-PGA2 478
RK80532PC064512	2.6 GHz	400 MHz	512 KB	62.6 W	1.525 V	5-72° C	FC-PGA2 478
RK80532PE056512	2.4 GHz	533 MHz	512 KB	59.8 W	1.525 V	5-71° C	FC-PGA2 478
RK80532PC041512	2.0 GHz	400 MHz	512 KB	54.3 W	1.525 V	5-69° C	FC-PGA2 478

¹ Only the 845GV SKU of this family supports DDR 333

² Variable VID maximum voltage. The Intel Pentium 4 processor ships with different voltage settings. For more detailed product specifications, please refer to our Web site at <http://developer.intel.com/design/pentium4/datashts/298643.htm>

Intel Access

Embedded Intel® Architecture Home Page:	intel.com/design/intarch
Developer's Site:	developer.intel.com
Intel in Communications:	intel.com/communications
General Information Hotline:	(800) 628-8686 or (916) 356-3104 5 a.m. to 5 p.m. PST
Intel® Literature Center:	(800) 548-4725 7 a.m. to 7 p.m. CST (U.S. and Canada)
	International locations please contact your local sales office.

UNITED STATES AND CANADA
Intel Corporation
Robert Noyce Bldg.
2200 Mission College Blvd.
P.O. Box 58119
Santa Clara, CA 95052-8119
USA

EUROPE
Intel Corporation (UK) Ltd.
Pipers Way
Swindon
Wiltshire SN3 1RJ
UK

ASIA-PACIFIC
Intel Semiconductor Ltd.
32/F Two Pacific Place
88 Queensway, Central
Hong Kong, SAR

JAPAN
Intel Kabushiki Kaisha
P.O. Box 115 Tsukuba-gakuen
5-6 Tokodai, Tsukuba-shi
Ibaraki-ken 305
Japan

SOUTH AMERICA
Intel Semicondutores do Brazil
Rue Florida, 1703-2 and CJ22
CEP 04565-001 Sao Paulo-SP
Brazil

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH INTEL® PRODUCTS. EXCEPT AS PROVIDED IN INTEL'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, INTEL ASSUMES NO LIABILITY WHATSOEVER, AND INTEL DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY RELATING TO SALE AND/OR USE OF INTEL PRODUCTS, INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT, OR OTHER INTELLECTUAL PROPERTY RIGHT. INTEL MAY MAKE CHANGES TO SPECIFICATIONS, PRODUCT DESCRIPTIONS, AND PLANS AT ANY TIME, WITHOUT NOTICE.

Intel Corporation may have patents or pending patent applications, trademarks, copyrights, or other intellectual property rights that relate to the presented subject matter. The furnishing of documents and other materials and information does not provide any license, express or implied, by estoppel or otherwise, to any such patents, trademarks, copyrights, or other intellectual property rights. Intel products are not intended for use in medical, life saving, life sustaining, critical control or safety systems, or in nuclear facility applications. The Intel® Pentium® 4 processor may contain design defects or errors known as errata, which may cause the product to deviate from published specifications. Current characterized errata are available upon request.

Intel, the Intel logo, Pentium, and Intel NetBurst are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

*Other names and brands may be claimed as the property of others.

Copyright © 2006 Intel Corporation. All rights reserved.

Printed in USA

0106/KSC/OCG/XX/PDF

 Please Recycle

273657-008US

