# Intel® Pentium® 4 Processors for Applied Computing

## Product Highlights


- Available at 2A GHz with a 400 MHz processor side bus delivering 3.2 GB of data per second into and out of the processor
- The Intel® Pentium® 4 processor is available in the mPGA-478 form factor
- Featuring the new Intel® NetBurst™ micro-architecture
  - Hyper-pipelined technology of the NetBurst™ micro-architecture doubles the pipeline depth compared to the P6 micro-architecture used on today's Pentium® III processors
  - 400 MHz System Bus delivers 3.2 GB of data per second into and out of the processor
  - Level 1 Execution Trace Cache includes 8 KB data cache, as well as an Execution Trace Cache that stores up to 12 K decoded micro-ops in the order of program execution
  - Rapid Execution Engine includes two Arithmetic Logic Units (ALUs) on the Intel Pentium 4 processor and are clocked at twice the core processor frequency
  - Level 2 Advanced Transfer Cache (ATC) is 512 KB in size and delivers a much higher 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
    - 256-bit data bus to the level 2 cache
    - Data clocked into and out of the cache every clock cycle
  - Advanced Dynamic Execution engine is a very deep, out-of-order speculative execution engine that keeps the execution units executing instructions
  - 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 that include 128-bit SIMD integer arithmetic and 128-bit SIMD double-precision floating-point operations
  - Data Prefetch Logic functionality that anticipates the data needed by an application and pre-loads it into the Advanced Transfer Cache, further increasing processor and application performance
- Validated with the Intel® 845 Chipset
- Manufactured on state-of-the-art .13µ process technology
- Memory cacheability up to 4 GB of addressable memory space and system memory scalability up to 64 GB of physical memory
- Support for uni-processor designs
- Data integrity and reliability features such as Error Correcting Code, Fault Analysis and Recovery for both system and L2 cache buses
- Fully compatible with existing Intel® Architecture-based software
- mPGA-478 form factor with Integrated Heat Spreader
- Embedded life cycle support

## Intel® Pentium® 4 Processor Overview

The Intel® Pentium® 4 processor is ideal for scalable performance applied computing. An advanced micro-architecture and a clock speed at 2A GHz enables the Intel Pentium 4 processor to meet applied computing demands today and in the future. The Intel Pentium 4 processor is ideal for communications, transaction terminal and industrial automation applications. 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 Intel 845 Chipset. The Intel 845 chipset expands the Intel Pentium 4 processor platform with a great balance of price and performance for applied computing segments. The Intel 845 chipset provides up to 2GB single channel (DDR200 or DDR 266) DDR memory. The Intel 845 chipset also features configurable optional Error Correcting Code (ECC) operation.

## Pentium® 4 Processor

| Product number | core speed (GHz) | External bus speed (MHz) | L2 cache | thermal design power | VOLTAGE | Tcase | package |
|---|---|---|---|---|---|---|---|
| RK80532PC041512 | 2A | 400 | 512K | 52.4 watts | 1.5V | 68C | mPGA-478 |

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