Product Brief

**Intel® Core™ Duo Processors**

Embedded Computing

# Intel® Core™ Duo Processors for Embedded Computing

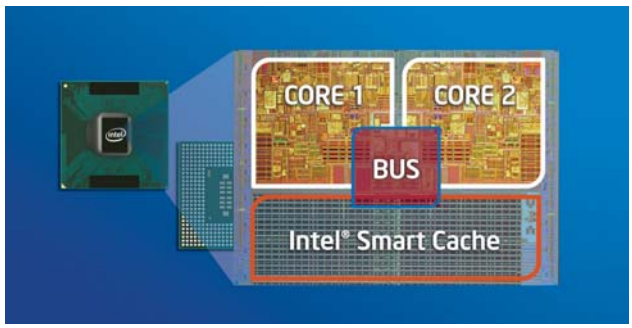
## Product Overview

The Intel® Core™ Duo processors are members of Intel's growing product line of multi-core processors. These dual-core processors combine the benefits of two high-performance execution cores with intelligent power management features to deliver significantly greater performance-per-watt over previous Intel® processors. Intel's 65nm process technology makes it possible to integrate two cores, along with many advanced features, in one physical package.

Intel Core Duo processors meet the needs of a wide range of low-power embedded applications such as interactive clients and industrial automation equipment. While incorporating advanced processor technology, they remain software-compatible with previous 32-bit Intel® architecture processors.

Intel Core Duo processors integrate two execution cores derived from the Intel® Pentium® M processor, whose power-efficiency is enabled through significant hardware architecture enhancements in stack management, instruction execution, and branch prediction. Integrating two execution cores enables Intel Core Duo processors to provide significant performance improvements while remaining in a thermal envelope that is similar to existing Intel Pentium M processors.

Intel Core Duo processors T2500[A] and L2400[A] are validated with the Mobile Intel® 945GME Express chipset. This chipset provides greater flexibility for developers of embedded applications by offering improved graphics and increased I/O bandwidth over previous Intel® chipsets, as well as remote asset management capabilities, and improved storage speed and reliability. These processors are also validated with the Intel® E7520 chipset, designed specifically to enable a variety of high-performance, low-power designs for data-intensive applications. In addition, the Intel Core Duo processor U2500[A] is validated with the Intel® 3100 chipset, which combines server-class memory and I/O controller functions in a single component. Intel's comprehensive processor/chipset validation process enables fast deployment of next-generation platforms to help developers maximize competitive advantage while minimizing development risks.

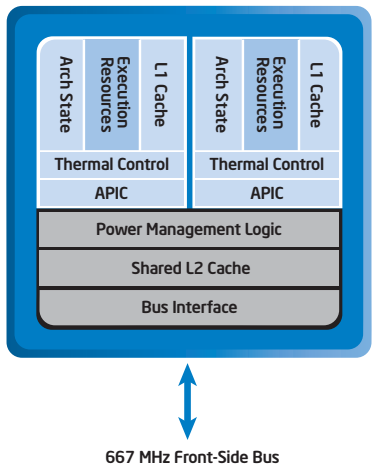



## Product Highlights

- Two complete execution cores in one processor package provide advancements in simultaneous computing such as multi-threaded applications and multi-tasking environments. Dual-core processing efficiently delivers performance while balancing power requirements
- Two execution cores share a high-performance, power-optimized 667 MHz front-side bus (FSB) to access the same chipset memory. To save power, address and data buffers are turned off when there is no activity
- Enhanced Intel SpeedStep® technology allows a system to dynamically adjust processor voltage and core frequency, decreasing average power consumption and average heat production
- Intel® Smart Cache Design allows two execution cores to share 2 MB of L2 cache, reducing FSB traffic and enhancing system responsiveness
- Intel® Advanced Thermal Manager supports new digital temperature sensors and thermal monitors on each execution core to enhance thermal monitoring accuracy
- Streaming SIMD Extensions 3 (SSE3) provides significant performance enhancement for multi-media applications. Additional instructions designed to improve thread synchronization, complex arithmetic, graphics, and video encoding.
- Fully code compatible with existing Intel architecture-based 32-bit application software

## Product Highlights (continued)

- Utilizing Intel® Dynamic Power Coordination, application software or operating system can change the sleep state of each execution core, allowing the platform to balance performance and power dissipation
- Embedded lifecycle support protects system investment by enabling extended product availability for embedded and communications customers
- Along with a strong ecosystem of hardware and software vendors, including members of the Intel® Communications Alliance (intel.com/go/ica), Intel helps developers cost-effectively meet design challenges and shorten time-to-market




Configuration of the Intel® Core™ Duo processor shows two complete execution cores and shared L2 cache. Intelligent power management features deliver significantly greater performance-per-watt over previous Intel® single-core processors.

### Intel® Core™ Duo Processors for Embedded Computing

| Product Number | Core Speed | Front-Side Bus Speed | L2 Cache | Thermal Design Power | VID | Tjunction | Package |
|---|---|---|---|---|---|---|---|
| Intel® Core™ Duo processor T2500[Δ] | | | | | | | |
| LF80539GF0412M | 2.0 GHz | 667 MHz | 2 MB | 31 watts | 1.1625 V-1.3 V | 0-100° C | 478 µFC-PGA |
| LE80539GF0412M | 2.0 GHz | 667 MHz | 2 MB | 31 watts | 1.1625 V-1.3 V | 0-100° C | 479 µFC-BGA |
| Intel® Core™ Duo processor L2400[Δ] | | | | | | | |
| LE80539LF0282M | 1.66 GHz | 667 MHz | 2 MB | 15 watts | 1.0 V-1.2125 V | 0-100° C | 479 µFC-BGA |
| Intel® Core™ Duo processor U2500[Δ] | | | | | | | |
| LE80539UE0092M | 1.20 GHz | 533 MHz | 2 MB | 9 watts | 1.1625 V-1.3 V | 0-100° C | 479 µFC-BGA |

[Δ] Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See http://www.intel.com/products/processor_number for details.

### Intel Access

| | |
|---|---|
| Embedded Intel® Architecture Home Page: | intel.com/design/intarch |
| Developer's Site: | intel.com/design |
| Intel in Embedded and Communications: | intel.com/go/embedded |
| 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. |



Printed in USA 0507/KSC/OCG/XX/PDF ♻ Please Recycle 311272-005US