

Product Brief

Intel® Core™2 Duo Processors

Embedded Computing



Intel® Core™2 Duo Processors T7500, T7400, L7500, L7400, and U7500 for Embedded Computing

Product Overview

Intel® Core™2 Duo processors are members of Intel's growing product line of multi-core processors based on Intel® Core™ microarchitecture, delivering breakthrough energy-efficient performance for embedded platforms. These processors provide an excellent performance-per-watt choice for small form factor applications such as interactive clients (i.e., point-of-sale terminals and ATMs), gaming platforms, industrial control and automation, digital security surveillance and medical imaging.

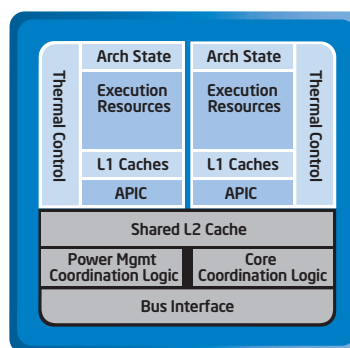
Intel® 65 nm process technology makes it possible to integrate two complete execution cores in one physical package, providing advancements in simultaneous computing for multi-threaded applications and multi-tasking environments. While incorporating advanced processor technology, these processors remain software-compatible with previous IA-32 processors.

Intel® Core™ Microarchitecture

Intel Core microarchitecture provides enhanced energy-efficient performance to help equipment manufacturers optimally balance processing capabilities within power and space constraints.

- **Intel® Wide Dynamic Execution:** Executes four instructions per clock cycle to improve execution speed and efficiency using a 14-stage pipeline.
- **Intel® Advanced Smart Cache:** Improves system performance by significantly reducing memory latency to frequently used data through dynamic allocation of shared L2 cache to each of the processor cores.
- **Intel® Smart Memory Access:** Optimizes use of available data bandwidth from the memory subsystem to accelerate out-of-order execution. A newly designed prediction mechanism reduces the time in-flight instructions have to wait for data. New pre-fetch algorithms move data from system memory into fast L2 cache in advance of execution.

- **Intel® Advanced Digital Media Boost:** Accelerates execution of SSE/2/3 instructions to significantly improve multimedia performance. 128-bit SSE instructions are issued at a throughput rate of one per-clock cycle, effectively doubling the speed of execution on a per-clock basis over previous-generation processors.
- **Intel® Intelligent Power Capability:** Manages runtime power consumption of execution cores by turning on computing functions only when needed.
- **Intel® Virtualization Technology¹:** Allows one hardware platform to function as multiple "virtual" platforms, improving manageability, limiting downtime and maintaining worker productivity by isolating computing activities into separate partitions. It also provides greater isolation and security between different applications and operating systems for added protection against corruption.
- **Intel® 64 Architecture²:** Supports 64-bit instructions, providing flexibility for 64-bit and 32-bit applications and operating systems.
- **Execute Disable Bit³:** Allows memory to be marked as executable or non-executable when combined with a supporting operating system.



Intel® Core™2 Duo processor, based on Intel® Core™ microarchitecture, includes two complete execution cores, shared L2 cache, and intelligent power management features which deliver significantly greater performance-per-watt over previous Intel® single-core processors.

- **Digital Thermal Sensor (DTS):** Measures maximum temperature on the die at any given time.
- **Embedded Lifecycle Support:** Protects system investment by enabling extended product availability for embedded customers.
- **Intel® Communications Alliance:** (intel.com/go/ica) Helps developers cost-effectively meet design challenges and shorten time-to-market through collaboration with a strong ecosystem of hardware and software vendors.

Intel® Core™2 Duo Processors T7500^A/L7500^A

- Validated with the Mobile Intel® GME965 Express chipset, providing excellent storage speed, reliability and remote asset management capabilities, integrated 32-bit 3D graphics engine based on Mobile Intel® Graphics Media Accelerator x3100, and up to 4 GB of 533/667 MHz DDR2 SODIMM system memory. The chipset supports outstanding graphics capabilities with graphics core performance up to 500 MHz, and increased I/O bandwidth with support of increased FSB frequency to 800 MHz.
- L7500 version offers a low-power, value-sensitive solution with excellent graphics performance.

Intel® Core™2 Duo Processors T7400^A/L7400^A/U7500^A

- Validated with the Mobile Intel® 945GME Express chipset, offering superb graphics, I/O bandwidth, storage speed, reliability and remote asset management capabilities, integrated 32-bit 3D graphics engine based on Intel® Graphics Media Accelerator 950, and up to 4 GB of 400/533/667 MHz DDR2 SODIMM system memory.
- T7400 and L7400 versions validated with the Intel® E7520 chipset, addressing the needs of high-performance, low-power platforms within small form factor designs.
- L7400 and U7500 versions also validated with the Intel® 3100 chipset, an integrated chipset offering low-power platform solutions for thermally sensitive and performance-intensive embedded, communications and storage applications.

Intel® Core™2 Duo Processors for Embedded Computing

Product Number	Core Speed	Front-Side Bus Speed	L2 Cache	Thermal Design Power	VID	Tj Max	Package
Intel® Core™2 Duo Processor T7500^A							
LE80537GG0494M	2.20 GHz	800 MHz	4 MB Unified	35 watts	0.75 V-1.35 V	100° C	479 μFC-BGA
LF80537GG0494M	2.20 GHz	800 MHz	4 MB Unified	35 watts	0.75 V-1.35 V	100° C	478 μFC-PGA
Intel® Core™2 Duo Processor L7500^A							
LE80537LG0254M	1.60 GHz	800 MHz	4 MB Unified	17 watts	0.75 V-1.3 V	100° C	478 μFC-PGA
Intel® Core™2 Duo Processor T7400^A							
LE80537GF0484M	2.16 GHz	667 MHz	4 MB Unified	34 watts	1.1625 V-1.3 V	100° C	479 μFC-BGA
LF80537GF0484M	2.16 GHz	667 MHz	4 MB Unified	34 watts	1.1625 V-1.3 V	100° C	478 μFC-PGA
Intel® Core™2 Duo Processor L7400^A							
LE80537LF0214M	1.50 GHz	667 MHz	4 MB Unified	17 watts	1.1625 V-1.3 V	100° C	479 μFC-PGA
Intel® Core™2 Duo Processor U7500^A							
LE80537UE0042M	1.06 GHz	533 MHz	2 MB Unified	10 watts	0.75 V-0.975 V	100° C	479 μFC-BGA

¹ Intel® Virtualization Technology requires a computer system with an enabled Intel® processor, BIOS, virtual machine monitor (VMM) and, for some uses, certain platform software enabled for it. Functionality, performance or other benefits will vary depending on hardware and software configurations and may require a BIOS update. Software applications may not be compatible with all operating systems. Please check with your application vendor.

² 64-bit computing on Intel architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers and applications enabled for Intel® 64 architecture. Performance will vary depending on your hardware and software configurations. Consult with your system vendor for more information.

³ Enabling Execute Disable Bit functionality requires a PC with a processor with Execute Disable Bit capability and a supporting operating system. Check with your PC manufacturer on whether your system delivers Execute Disable Bit functionality.

⁴ 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.

Embedded Intel® Architecture Home Page: intel.com/design/intarch

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH INTEL® PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. 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. UNLESS OTHERWISE AGREED IN WRITING BY INTEL, THE INTEL PRODUCTS ARE NOT DESIGNED NOR INTENDED FOR ANY APPLICATION IN WHICH THE FAILURE OF THE INTEL PRODUCT COULD CREATE A SITUATION WHERE PERSONAL INJURY OR DEATH MAY OCCUR.

Intel may make changes to specifications and product descriptions at any time, without notice. Designers must not rely on the absence or characteristics of any features or instructions marked "reserved" or "undefined." Intel reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them. The information here is subject to change without notice. Do not finalize a design with this information. The products described in this document may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request. Contact your local Intel sales office or your distributor to obtain the latest specifications and before placing your product order. Copies of documents which have an order number and are referenced in this document, or other Intel literature, may be obtained by calling 1-800-548-4725, or by visiting Intel's Web Site www.intel.com.

Intel, the Intel logo, Intel. Leap ahead, Intel. Leap ahead. logo, and Intel Core are trademarks of Intel Corporation in the U.S. and other countries.

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

Copyright © 2007 Intel Corporation. All rights reserved.

Printed in USA

0807/KSC/OCG/XX/PDF

♻️ Please Recycle

316663-004US

