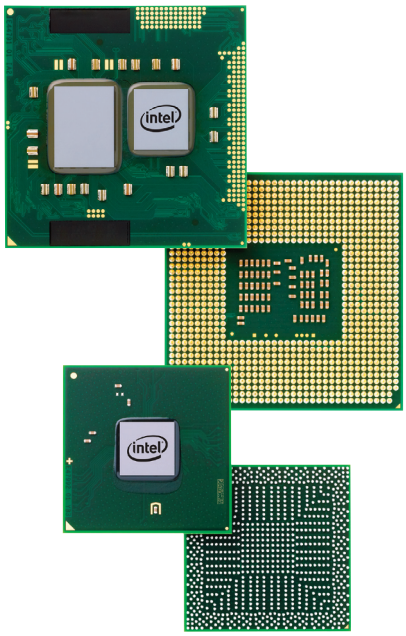
PLATFORM BRIEF
Intel® Core™ i7, i5, and i3 Processors with Mobile Intel® QM57 and Mobile Intel® HM55 Express Chipsets
Embedded Computing

Intel® Core™ i7, Intel® Core™ i5 and Intel® Core™ i3 Processor-based Platforms for Embedded Computing



Product Overview

Based on 32nm process technology, Intel® Core™ i7, Intel® Core™ i5, and Intel® Core™ i3 processors feature intelligent performance, power efficiency, integrated graphics, and error correcting code (ECC) memory[1] on industry-standard x86 architecture. When paired with the Mobile Intel® QM57 or Mobile Intel® HM55 Express chipset, this integrated two-chip platform provides excellent graphics, memory, and I/O bandwidth, as well as remote management capabilities and reliability to meet the requirements of a broad range of embedded applications, including retail and transaction solutions, gaming platforms, and industrial automation equipment.

The processors feature dual-core processing with industry-leading performance capabilities, including Intel® Turbo Boost Technology[2] (select SKUs) and Intel® Hyper-Threading Technology.[3] Intel® AES New Instructions (Intel® AES-NI) help accelerate data encryption and decryption, and improve performance. While incorporating advanced technology, these processors remain software-compatible with previous IA-32 processors.

The graphics engine is integrated into the processor, providing a two-chip solution with enhanced graphics performance compared with previous Intel® platforms. The memory controller hub is also integrated into the processor, providing faster performance as well as board real estate savings. Additionally, developers can create one board design and scale their product line with a variety of performance-per-watt processors using the same socket. Thermal design power (TDP) options range from 18W to 35W.

Product Highlights

Integrated graphics engine: Supports enhanced graphics capabilities and performance while reducing overall platform power requirements and footprint.

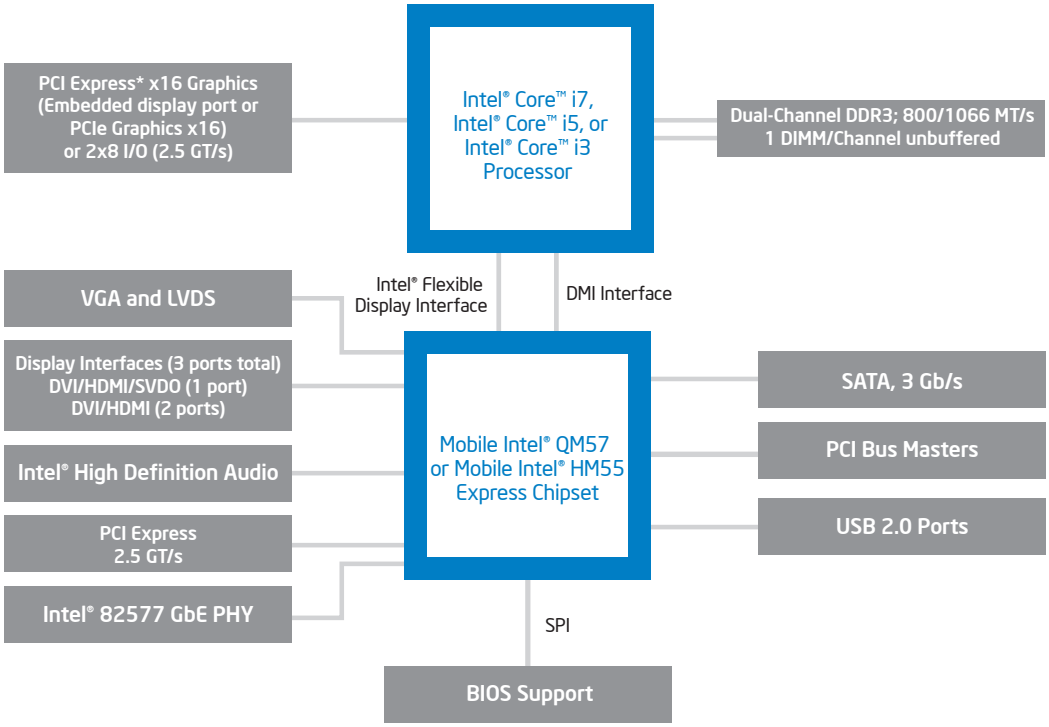
Memory Error Correction: ECC memory provides a high level of data integrity, reliability, and system uptime (select SKUs).

Intel® Intelligent Power Technology[4]: Reduces idle power consumption through architectural improvements such as integrated power gates and automated low-power states.

Intel® Turbo Boost Technology: Applications take advantage of higher speed execution on demand by using available power to run at a higher frequency.

Intel® Hyper-Threading Technology: Simultaneous multi-threading helps boost performance for parallel, multi-threaded applications (select SKUs).

Intel® vPro™ Technology: Unprecedented hardware support for vital security and management functions with Intel® Virtualization Technology,[5] Intel® Active Management Technology,[6] and Intel® Trusted Execution Technology[7] (select SKUs).



Software Overview

The following independent operating system and BIOS vendors provide support for these platforms.

OPERATING SYSTEM	CONTACT
Microsoft Windows Vista* SP2	Intel provides drivers[8]
Microsoft Windows* 7	Intel provides drivers[8]
Microsoft Windows* XP SP3	Intel provides drivers[8]
Microsoft Windows Embedded Standard 2009	Intel provides drivers[8]
Microsoft Windows Embedded POSReady (WEPOS)	Intel provides drivers[8]
Red Hat Enterprise Linux* 5.5	Red Hat
SUSE SLE* 11	Novell
Wind River Linux* 3.0	Wind River
Wind River VxWorks* 6.8	Wind River

BIOS
American Megatrends
Insyde Software
Phoenix Technologies

Platform Features and Benefits

FEATURES	BENEFITS
Supports key embedded platform requirements	Ideal for compute-intensive embedded applications.
Extended life cycle product support	Protects system investment by enabling extended product availability for embedded customers.
Embedded ecosystem support	Along with a strong ecosystem of hardware and software vendors, including members of the Intel® Embedded Alliance (intel.com/go/eca), Intel helps to cost-effectively meet development challenges and speed time-to-market.
Intelligent performance	Delivers optimum efficiency by adapting performance to embedded application needs.
Intel® Turbo Boost Technology[2]	Boosts performance for specific workloads by increasing processor frequency.
Intel® QuickPath Technology	Delivers bandwidth improvement for data-intensive applications.
Intel® Hyper-Threading Technology[3]	Enables simultaneous multi-threading within each processor core, up to two threads per core or up to four threads per processor; reduces computational latency, making optimal use of every clock cycle.
Intel® Smart Cache Technology	Large on-die shared last-level cache reduces latency to data, improving performance and power efficiency.
Intel® AES New Instructions (Intel® AES-NI)	New instructions added to the architecture help accelerate data encryption and decryption, and improve performance.
Error Correcting Code memory[1]	Detects multiple-bit memory errors; locates and corrects single-bit errors to keep the system up and running.
Intel® Intelligent Power Technology[4]	Automated energy efficiency reduces power consumption.
Integrated power gates	Reduces idle processor cores to near zero power when not in use to help conserve power and lower operating costs.
Automated low-power states	Adjusts system power consumption based on real-time processor loads.
Intel® vPro™ Technology	Remote management, flexible virtualization, and enhanced security capabilities enable solutions that are trusted and cost-effective.
Intel® Active Management Technology[6] 6.0 (Intel® AMT)	The latest remote management and maintenance capabilities enable IT professionals to query, fix, and protect networked embedded devices, even when they're powered off, not responding, or have software issues. As part of Intel vPro technology, Intel AMT helps perform remote asset tracking and checks the presence of management agents virtually anytime. Also, devices can be remotely turned on/off to reduce energy consumption during non-peak operating times.
Intel® Virtualization Technology[5]	Speeds the transfer of platform control and movement of data between the virtual machine monitor (VMM) and other platform agents (including guest OSs and I/O devices). By lowering the workload on the VMM, this technology addresses many embedded system design challenges, like migrating legacy software, increasing real-time performance, and making applications more secure.
Intel® Trusted Execution Technology[7]	Protects embedded devices and virtual environments against rootkit and other system level attacks. Using an industry-standard TPM 1.2 to store keys and other protected data, this portion of Intel vPro technology boots the BIOS, operating system, and software into a "trusted" execution state, verifying the integrity of the virtual machine and protecting the platform from unauthorized access.

Intel® Core™ i7, Intel® Core™ i5, and Intel® Core™ i3 Processors for Embedded Computing[Δ]

	INTEL® CORE™ i7-660UE	INTEL® CORE™ i7-620M	INTEL® CORE™ i7-610E	INTEL® CORE™ i7-620LE	INTEL® CORE™ i7-620UE	INTEL® CORE™ i5-520M	INTEL® CORE™ i5-520E	INTEL® CORE™ i3-330E
Cores/Threads	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/4
Core Frequency (GHz)								
Base Frequency	1.33	2.66	2.53	2.00	1.06	2.40	2.40	2.13
1 Core Turbo	2.40	3.33	3.20	2.80	2.13	2.93	2.93	N/A
2 Core Turbo	2.00	3.06	2.93	2.53	1.73	2.66	2.66	N/A
Last-Level Cache	4 MB	4 MB	4 MB	4 MB	4 MB	3 MB	3 MB	3 MB
Thermal Design Power	18 W	35 W	35 W	25 W	18 W	35 W	35 W	35 W
Package	1288 FCBGA	988 FCPGA	1288 FCBGA	1288 FCBGA	1288 FCBGA	988 FCPGA	1288 FCBGA	1288 FCBGA
Error Correcting Code	YES	NO	YES	YES	YES	NO	YES	YES
Intel® AES-NI	YES	YES	YES	YES	YES	YES	YES	NO
Intel® Turbo Boost Technology	YES	YES	YES	YES	YES	YES	YES	NO
Intel® Hyper-Threading Technology	YES	YES	YES	YES	YES	YES	YES	YES
Intel® vPro™ Technology								
Intel® Virtualization Technology	YES	YES	YES	YES	YES	YES	YES	NO
Intel® Active Management Technology 6.0 (with Intel® QM57 chipset)	YES	YES	YES	YES	YES	YES	YES	NO
Intel® Trusted Execution Technology	YES	YES	YES	YES	YES	YES	YES	NO

Mobile Intel® QM57 and Mobile Intel® HM55 Express Chipsets for Embedded Computing

PRODUCT	PRODUCT CODE	PACKAGE	FEATURES
Intel® BD82QM57 Platform Controller Hub	BD82QM57	1071 FCBGA	Supports Intel® vPro™ technology; six eSATA ports; 14 USB ports; eight PCIe Express* I/O ports
Intel® BD82HM55 Platform Controller Hub	BD82HM55	1071 FCBGA	Four eSATA ports; 12 USB ports; six PCIe Express* I/O ports

Intel in Embedded and Communications: **intel.com/embedded**

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

[1] Error Correcting Code memory is available only on Intel® Core™ processors which come in a Ball Grid Array (BGA) package and these SKUs were specifically developed by the Intel® Embedded and Communication Group.

[2] Intel® Turbo Boost Technology requires a Platform with a processor with Intel Turbo Boost Technology capability. Intel Turbo Boost Technology performance varies depending on hardware, software and overall system configuration. Check with your platform manufacturer on whether your system delivers Intel Turbo Boost Technology. For more information, see www.intel.com/technology/turboboost.

[3] Hyper-Threading Technology requires a computer system with a processor supporting Hyper-Threading Technology and an HT Technology enabled chipset, BIOS and operating system. Performance will vary depending on the specific hardware and software you use. See www.intel.com/info/hyperthreading/ for more information including details on which processors support HT Technology.

[4] Intel® Intelligent Power Technology requires a computer system with an enabled Intel® processor, chipset, BIOS and for some features, an operating system enabled for it. Functionality or other benefits may vary depending on hardware implementation and may require a BIOS and/or operating system update. Please check with your system vendor for details.

[5] Intel® Virtualization Technology requires a computer system with an enabled Intel® processor, BIOS, virtual machine monitor (VMM) and, for some uses, certain computer system 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.

[6] Intel® Active Management Technology requires the computer system to have an Intel® AMT-enabled chipset, network hardware and software, as well as connection with a power source and a corporate network connection. Setup requires configuration by the purchaser and may require scripting with the management console or further integration into existing security frameworks to enable certain functionality. It may also require modifications of implementation of new business processes. With regard to notebooks, Intel AMT may not be available or certain capabilities may be limited over a host OS-based VPN or when connecting wirelessly, on battery power, sleeping, hibernating or powered off. For more information, see www.intel.com/technology/platform-technology/intel-amt/.

[7] No computer system can provide absolute security under all conditions. Intel® Trusted Execution Technology (Intel® TXT) requires a computer system with Intel® Virtualization Technology, an Intel TXT-enabled processor, chipset, BIOS, Authenticated Code Modules and an Intel TXT-compatible measured launched environment (MLE). The MLE could consist of a virtual machine monitor, an OS or an application. In addition, Intel TXT requires the system to contain a TPM v1.2, as defined by the Trusted Computing Group and specific software for some uses. For more information, see http://www.intel.com/technology/security.

[8] Drivers available at: downloadcenter.intel.com (enter chipset name).

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