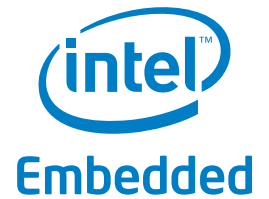
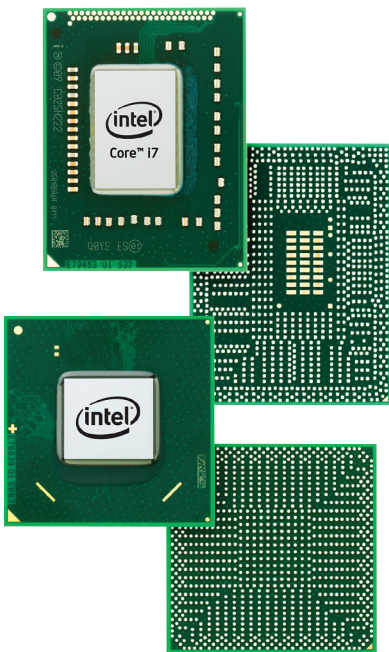


PLATFORM BRIEF

Intel® Core™ i7 and Core™ i5 processors
with Intel® QM67 Express and
Intel® HM65 Express Chipsets
Embedded Computing



2nd Generation Intel® Core™ i7 (2710QE, 2715QE) and Intel® Core™ i5 (2510E, 2515E) Processor-based Platforms for Embedded Computing



Product Overview

These Intel® Core™ i7 and Intel® Core™ i5 processors are based on the 2nd generation Intel® Core™ microarchitecture on 32nm process technology, featuring new levels of performance for embedded, compute-intensive applications along with advanced features for remote management capabilities and reliability. When paired with the Intel® QM67 Express or Intel® HM65 Express chipset, these two-chip platforms provide excellent media, graphics, and I/O flexibility, stunning and seamless visual experiences, as well as error correcting code (ECC) memory¹. These platforms meet the requirements of a broad range of embedded applications, including retail and transaction solutions, signage, gaming platforms, industrial automation and medical equipment.

Processors offer quad-core and dual-core processing with industry-leading performance capabilities. While incorporating advanced technology, they remain software-compatible with previous IA-32 processors.

The next-generation graphics engine, Intel® HD Graphics 3000, doubles graphics performance compared with previous Intel® Core™ processor-based platforms. Full integration of the CPU, media/graphics capabilities and memory controller reduces overall platform footprint and provides faster performance as well as board real estate savings. Additionally, developers can create one board design and scale their product line between quad- and dual-core processors using the same socket. Thermal design power (TDP) options are 35W and 45W.

Product Highlights

Intel® HD Graphics 3000: Supports high-end enhanced media/graphics capabilities and performance while reducing overall platform power requirements.

Intel® Advanced Vector Extensions: Accelerates floating-point compute performance for signal and image processing applications.

Intel® Quick Sync Video: Improves media/video performance and frees up the CPU for other tasks.

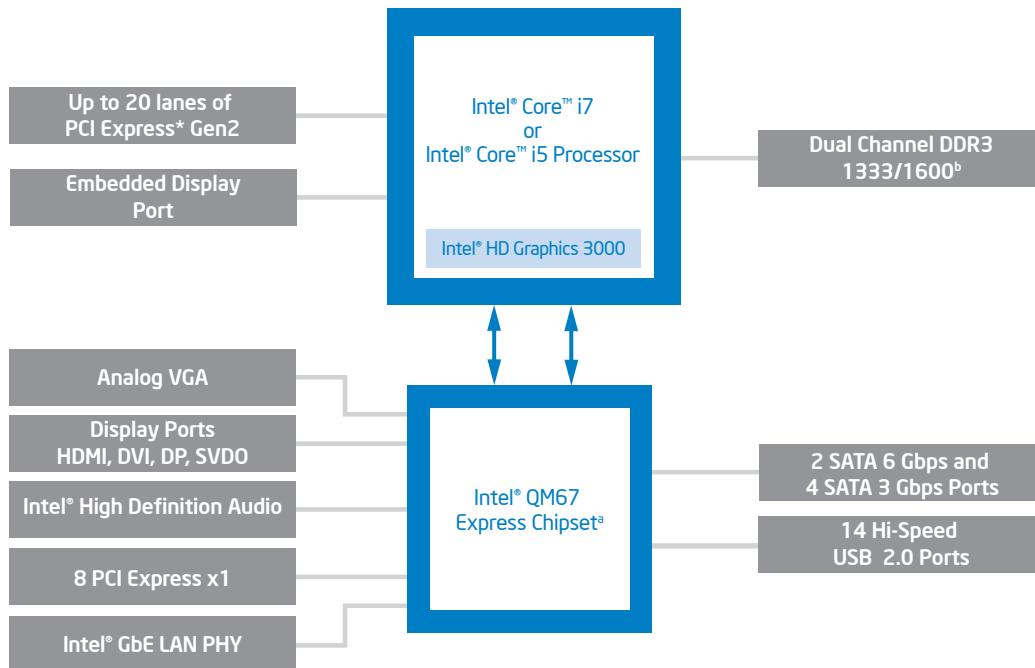
ECC¹: Provides a high level of data integrity, reliability, and system uptime (select SKUs).

Intel® Intelligent Power Technology²: Reduces idle power consumption through architectural improvements such as integrated power gates and automated low-power states.

Intel® Turbo Boost Technology³ 2.0: Runs applications faster by using available thermal headroom to run at a higher frequency.

Intel® Hyper-Threading Technology⁴: Simultaneous multi-threading helps boost performance for parallel, multi-threaded applications.

Intel® vPro™ Technology⁵: When paired with the Intel QM67 Express chipset, this platform delivers unprecedented hardware support for vital security and management functions utilizing Intel® Virtualization Technology⁶, Intel® Active Management Technology⁷, and Intel® Trusted Execution Technology⁸.



^aIntel® HM65 Express chipset also available with a subset of features.

^bAll SKUs support 1333 MT/s, 1 DIMM per channel (1 DPC); the PGA 4-core SKU supports 1333 MT/s, 2 DIMMs per channel (2 DPC); the PGA 4-core SKU also supports 1600 MT/s but only with 1 DIMM per channel (1DPC).

Software Overview

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

OPERATING SYSTEM

Microsoft Windows* 7
 Microsoft Windows* XP SP3
 Microsoft Windows Embedded Standard 7
 Microsoft Windows Embedded Standard 2009
 Microsoft Windows Embedded POSReady (WEPOS)
 Red Hat Enterprise Linux* 6.1
 SUSE SLE* 11 SP1
 Wind River Linux* 3.0
 Wind River VxWorks* 6.8

CONTACT

Intel provides drivers⁹
 Intel provides drivers⁹
 Intel provides drivers⁹
 Intel provides drivers⁹
 Intel provides drivers⁹
 Red Hat
 Novell
 Wind River
 Wind River

BIOS

American Megatrends
 Insyde Software
 Phoenix Technologies
 Byosoft

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/embeddedalliance), Intel helps to cost-effectively meet development challenges and speed time-to-market.
Intel® Advanced Vector Extensions	Enables faster performance on digital signal image and digital signal processing workloads for compute-intensive applications such as radar detection, hurricane command center, ruggedized navigation systems and remote medical image processing.
Intel® Turbo Boost Technology ³ 2.0	Boosts performance for specific workloads by increasing processor frequency.
Intel® HD Graphics 3000	Excellent 3D performance for a broad range of embedded applications with support for dual LVDS and hybrid multi-monitor configurations.
Intel® Hyper-Threading Technology ⁴	Enables simultaneous multi-threading within each processor core, up to two threads per core; 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 (select SKUs)	Detects multiple-bit memory errors; locates and corrects single-bit errors to keep the system up and running.
Intel® Intelligent Power Technology ²	Automated energy efficiency reduces power consumption.
Intel® Quick Sync Video Technology	Speeds up video conversion, editing and sharing for embedded applications such as video surveillance.
Automated low-power states	Adjusts system power consumption based on real-time processor loads.
Intel® Clear Video HD Technology	Visual quality and color fidelity enhancements deliver spectacular HD media playback for embedded applications such as digital signage and gaming.
Intel® vPro™ Technology ⁵	Remote management, flexible virtualization, and enhanced security capabilities enable solutions that are trusted and cost-effective.
Intel® Active Management Technology ⁷	The latest remote management and maintenance capabilities enable vendors to rollback firmware image; remote host-based provisioning helps to ease provisioning of end device.
Intel® Virtualization Technology ⁶	Speeds the transfer of platform control and movement of data between the virtual machine monitor (VMM) and other platform agents (including guest operating systems 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 ⁸	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 and Intel® Core™ i5 Processors for Embedded Computing

PROCESSOR NUMBER ^A	CORES/ THREADS	CORE FREQUENCY (GHz)			LAST- LEVEL CACHE	THERMAL DESIGN POWER	PACKAGE	ERROR CORRECTING CODE
		BASE FREQUENCY	1 CORE TURBO (MAX)	2 CORE TURBO (MAX)				
Intel® Core™ i7-2710QE	4/8	2.1	3.0	2.9	6 MB	45 W	FCPGA988	No
Intel® Core™ i7-2715QE	4/8	2.1	3.0	2.9	6 MB	45 W	FCBGA1023	Yes
Intel® Core™ i5-2510E	2/4	2.5	3.1	3.0	3 MB	35 W	FCPGA988	No
Intel® Core™ i5 2515E	2/4	2.5	3.1	3.0	3 MB	35 W	FCBGA1023	Yes

INTEL® vPRO™ TECHNOLOGY³

PROCESSOR NUMBER ^A	INTEL® AES-NI	INTEL® TURBO BOOST TECHNOLOGY	INTEL® HYPER- THREADING TECHNOLOGY	INTEL® VIRTUALIZATION TECHNOLOGY	INTEL® ACTIVE MANAGEMENT TECHNOLOGY	INTEL® TRUSTED EXECUTION TECHNOLOGY
Intel® Core™ i7-2710QE	Yes	Yes	Yes	Yes	Yes	Yes
Intel® Core™ i7-2715QE	Yes	Yes	Yes	Yes	Yes	Yes
Intel® Core™ i5-2510E	Yes	Yes	Yes	Yes	Yes	Yes
Intel® Core™ i5 2515E	Yes	Yes	Yes	Yes	Yes	Yes

^AWhen paired with Intel® QM67 Express chipset.

Intel® QM67 and Intel® HM65 Express Chipsets for Embedded Computing

PRODUCT	PRODUCT CODE	PACKAGE	FEATURES
Intel® BD82QM67 Platform Controller Hub	BD82QM67	FCBGA 989	Supports Intel® vPro™ technology; 6 SATA ports; 14 Hi-Speed USB 2.0 ports; 8 PCI Express* I/O ports
Intel® BD82HM65 Platform Controller Hub	BD82HM65	FCBGA 989	4 SATA ports; 12 USB ports; 6 PCI Express* I/O ports

Intel in Embedded and Communications: intel.com/embedded

^A 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® 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.

³ Requires a system with Intel® Turbo Boost Technology capability. Consult your PC manufacturer. Performance varies depending on hardware, software and system configuration. For more information, visit <http://www.intel.com/technology/turboboost>.

⁴ Requires an Intel® HT Technology-enabled system, check with your PC manufacturer. Performance will vary depending on the specific hardware and software used. Not available on Intel® Core™ i5-750 processor. For more information including details on which processors support HT Technology, visit <http://www.intel.com/info/hyperthreading>.

⁵ Intel® vPro™ Technology is sophisticated and requires setup and activation. Availability of features and results will depend upon the setup and configuration of your hardware, software and IT environment. To learn more visit: <http://www.intel.com/technology/vpro>.

⁶ Intel® Virtualization Technology requires a computer system with an enabled Intel® processor, BIOS, virtual machine monitor (VMM). Functionality, performance or other benefits will vary depending on hardware and software configurations. Software applications may not be compatible with all operating systems. Consult your PC manufacturer. For more information, visit <http://www.intel.com/go/virtualization>.

⁷ Requires activation and a system with a corporate network connection, an Intel® AMT-enabled chipset, network hardware and software. For notebooks, Intel AMT may be unavailable or limited over a host OS-based VPN, when connecting wirelessly, on battery power, sleeping, hibernating or powered off. Results dependent upon hardware, setup and configuration. For more information, visit <http://www.intel.com/technology/platform-technology/intel-amt>.

⁸ 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). In addition, Intel TXT also requires the system to contain a TPM v1.s. For more information, see <http://www.intel.com/technology/security>.

⁹ Drivers available at: downloadcenter.intel.com (enter chipset name).

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