PLATFORM BRIEF
Intel® Core™ i7, Core™ i5 and Core™ i3 Processors with Intel® Q67 Express and Intel® B65 Express Chipsets
Embedded Computing

2nd Generation Intel® Core™ i7-2600, Intel® Core™ i5-2400 and Intel® Core™ i3-2120 Processor-based Platforms for Embedded Computing

Product Overview

These Intel® Core™ processors are based on the 2nd generation Intel® Core™ micro-architecture on 32nm process technology which offers enhanced media and graphics capabilities and performance while reducing overall platform power requirements. With support for both quad-core and dual-core configurations, these processors improve performance and efficiency of multi-threaded applications with the option for unprecedented hardware support of vital security and management functions. When paired with the Intel® Q67 Express chipset or Intel® B65 Express chipset, these two-chip platforms provide ideal solutions for embedded market segments such as retail and transaction solutions, digital signage, digital security surveillance, gaming, medical, communications, and industrial automation and control.

With the graphics engine integrated into the processor, these solutions provide enhanced media and 3D graphics performance compared with previous Intel Core processor-based platforms. The memory controller hub is also integrated into the processor, providing for lower memory latency. Full integration of the CPU, media/graphics capabilities and memory controller into the processor reduces overall platform footprint. While incorporating advanced technology, these processors remain software-compatible with previous IA-32 processors. Developers can also create one board design and scale their product line with a variety of processors using the same socket.

The new Intel® Advanced Vector Extensions (Intel® AVX) can dramatically increase signal processing performance when compared to previous generations. Intel® AES New Instructions (Intel® AES-NI) on select processors helps accelerate data encryption, decryption, and improve performance.

Product Highlights

Intel® HD Graphics 2000: Supports enhanced media and graphics capabilities and performance while reducing overall platform power requirements.

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

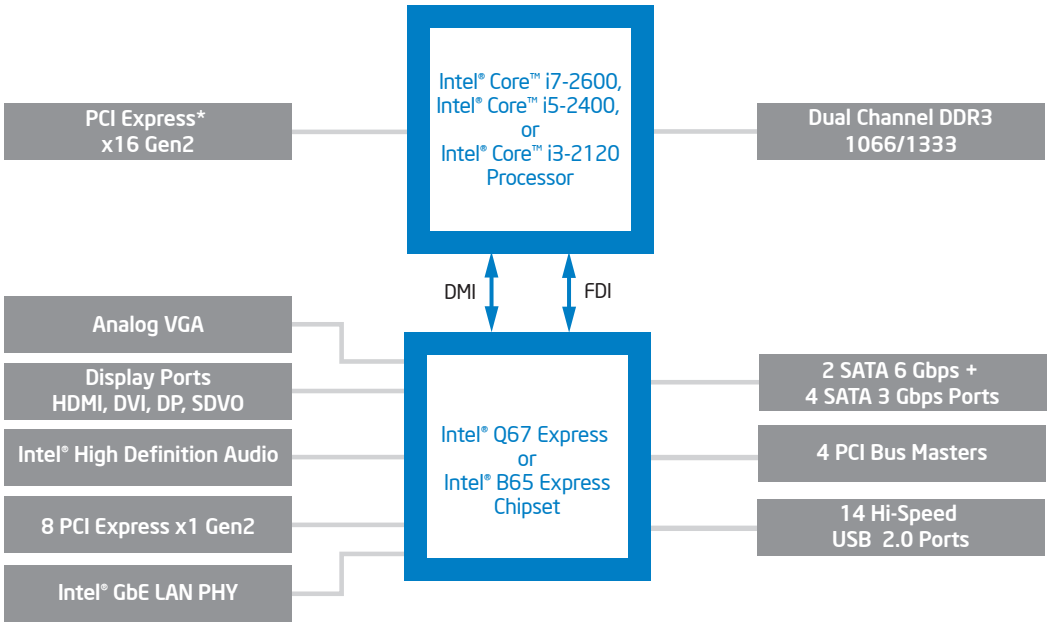
Intel® Intelligent Power Technology[1]: Reduces idle power consumption through architectural improvements such as integrated power gates and automated low-power states.

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

Intel® Turbo Boost Technology[2] 2.0: Allows processor and graphics engine to run at a higher frequency. Applications take advantage of higher speed execution on demand by using available processor thermal headroom (select SKUs).

Intel® Hyper-Threading Technology[3]: Enables simultaneous processing of two threads per core, significantly improving performance and efficiency of multi-threaded applications (select SKUs).

Intel® vPro™ Technology[4]: Delivers unprecedented hardware support for vital security and management functions with Intel® Active Management Technology,[5] Intel® Virtualization 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	BIOS
Microsoft Windows* 7	Intel provides drivers[8]	American Megatrends
Microsoft Windows* XP SP3	Intel provides drivers[8]	Insyde Software
Microsoft Windows Embedded Standard 7	Intel provides drivers[8]	Phoenix Technologies
Microsoft Windows Embedded Standard 2009	Intel provides drivers[8]	Byosoft
Microsoft Windows Embedded POSReady (WEPOS)	Intel provides drivers[8]	
Red Hat Enterprise Linux* 6.1	Red Hat	
SUSE SLE* 11 SP1	Novell	
Wind River Linux* 3.0	Wind River	
Wind River VxWorks* 6.8	Wind River	

Platform Features and Benefits

FEATURES	BENEFITS
Supports key embedded platform requirements	Ideal for compute-intensive embedded applications.
Extended lifecycle 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	Accelerates compute performance for image and signal processing applications.
Intel® Turbo Boost Technology[2] 2.0	Boosts performance for specific workloads by increasing processor frequency.
Intel® Hyper-Threading Technology[3]	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® Quick Sync Video Technology	Increases speed for video conversion, editing and sharing for embedded applications such as video surveillance.
Intel® AES New Instructions (Intel® AES-NI)	New instructions added to the architecture help accelerate data encryption and decryption, and improve performance.
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® Intelligent Power Technology[1]	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[4]	Remote management, flexible virtualization, and enhanced security capabilities enable solutions that are trusted and cost-effective.
Intel® Active Management Technology[5] (when paired with Intel® Q67 Express chipset)	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. 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[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[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™ Processors for Embedded Computing

PROCESSOR NUMBER[Δ]	CORES/ THREADS	CORE FREQUENCY (GHz)		GRAPHICS FREQUENCY (GHZ)	LAST-LEVEL CACHE	THERMAL DESIGN POWER	PACKAGE
		BASE FREQUENCY	1 CORE TURBO (MAX)				
Intel® Core™ i7-2600	4/8	3.4	3.8	0.85	8 MB	95 W	LGA1155
Intel® Core™ i5-2400	4/4	3.1	3.4	0.85	6 MB	95 W	LGA1155
Intel® Core™ i3-2120	2/4	3.3	N/A	0.85	3 MB	65 W	LGA1155

PROCESSOR NUMBER[Δ]	INTEL® AES-NI	INTEL® TURBO BOOST TECHNOLOGY	INTEL® AVX	INTEL® HYPER-THREADING TECHNOLOGY	INTEL® vPRO™ TECHNOLOGY		
					INTEL® VIRTUALIZATION TECHNOLOGY	INTEL® ACTIVE MANAGEMENT TECHNOLOGY	INTEL® TRUSTED EXECUTION TECHNOLOGY
Intel® Core™ i7-2600	Yes	Yes	Yes	Yes	Yes	Yes[a]	Yes
Intel® Core™ i5-2400	Yes	Yes	Yes	No	Yes	Yes[a]	Yes
Intel® Core™ i3-2120	No	No	Yes	Yes	Yes	No	No

[a]When paired with Intel® Q67 Express chipset.

Intel® Q67 Express Chipset and Intel® B65 Express Chipset for Embedded Computing

PRODUCT	PRODUCT CODE	PACKAGE	FEATURES
Intel® BD82Q67 Platform Controller Hub	BD82Q67	942 FCBGA	Intel® Active Management Technology; 6 SATA ports; 14 USB ports; 8 PCI Express* I/O ports
Intel® BD82B65 Platform Controller Hub	BD82B65	942 FCBGA	6 SATA ports; 14 USB ports; 8 PCI 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] 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.

[2] 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.

[3] 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.

[4] 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.

[5] 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 & configuration. For more information, visit http://www.intel.com/technology/platform-technology/intel-amt.

[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] 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). Intel TXT also requires the system to contain a TPM v1.s. For more information, visit http://www.intel.com/technology/security.

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

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