



Unleash Your Imagination

The Intel® Z97 Chipset and 4th Generation and 5th Generation Intel® Core™ Processors



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Unleash your imagination with 4th and 5th generation Intel® Core™ processors and the Intel® Z97 chipset. New responsiveness capabilities and unlocked flexibility allow you to reach your gaming potential.

Smart Performance

The Intel Z97 chipset with 4th and 5th gen Intel Core processors deliver excellent performance for an unparalleled PC experience. From slaying your PC game opponents to editing your favorite videos, the Intel Z97 chipset and 4th and 5th gen Intel Core processors provide maximum power and performance for whatever you do. Smart features such as Intel® Turbo Boost Technology 2.0¹ and Intel® Hyper-Threading Technology² activate full processing power exactly where and when you need it.

Unlocked Freedom

The combination of the Intel Z97 chipset and the new unlocked 4th gen Intel Core processors allow you to unlock your system's ultimate performance. These capabilities allow you to change the core, graphics, and memory frequencies without having to run any other part of the system above specifications.³ With the new unlocked tuning capabilities of the 4th gen Intel Core processors and the Intel Z97 chipset, your PC experience is unleashed with flexible performance.

Easy Access to Your Digital Life

The Intel Z97 chipset offers responsiveness capabilities to help you stay in sync and manage your digital content. Instantly access your data by allowing your content to be refreshed in the standby power state with Intel® Smart Connect Technology.⁴ While on the go, you can also access your PC remotely with Intel® Remote Wake Technology⁵—even when the PC is off. In addition to fast boot and resume times, Intel® Rapid Start Technology⁶ provides energy efficiency without sacrificing user experience. Intel® Smart Response Technology⁷ enables you to utilize high-capacity hard disk drives (HDDs) and a minimal Solid-State Drive (SSD) volume for a low-cost solution that delivers faster application loading for the most demanding enthusiasts.

Stunning Visuals with Intel® Processor Graphics

The 4th and 5th gen Intel Core processors add a new dimension to your PC experience with smart performance and built-in 3-D visual and graphics support.⁸ Intel® Quick Sync Video technology, our built-in hardware accelerator in all 4th and 5th gen Intel Core processors, delivers astonishing video transcoding performance, enabling your PC to edit, burn, and share your content quickly—without the need for added hardware. Intel® InTru™ 3D⁹ delivers 3-D movie playback,

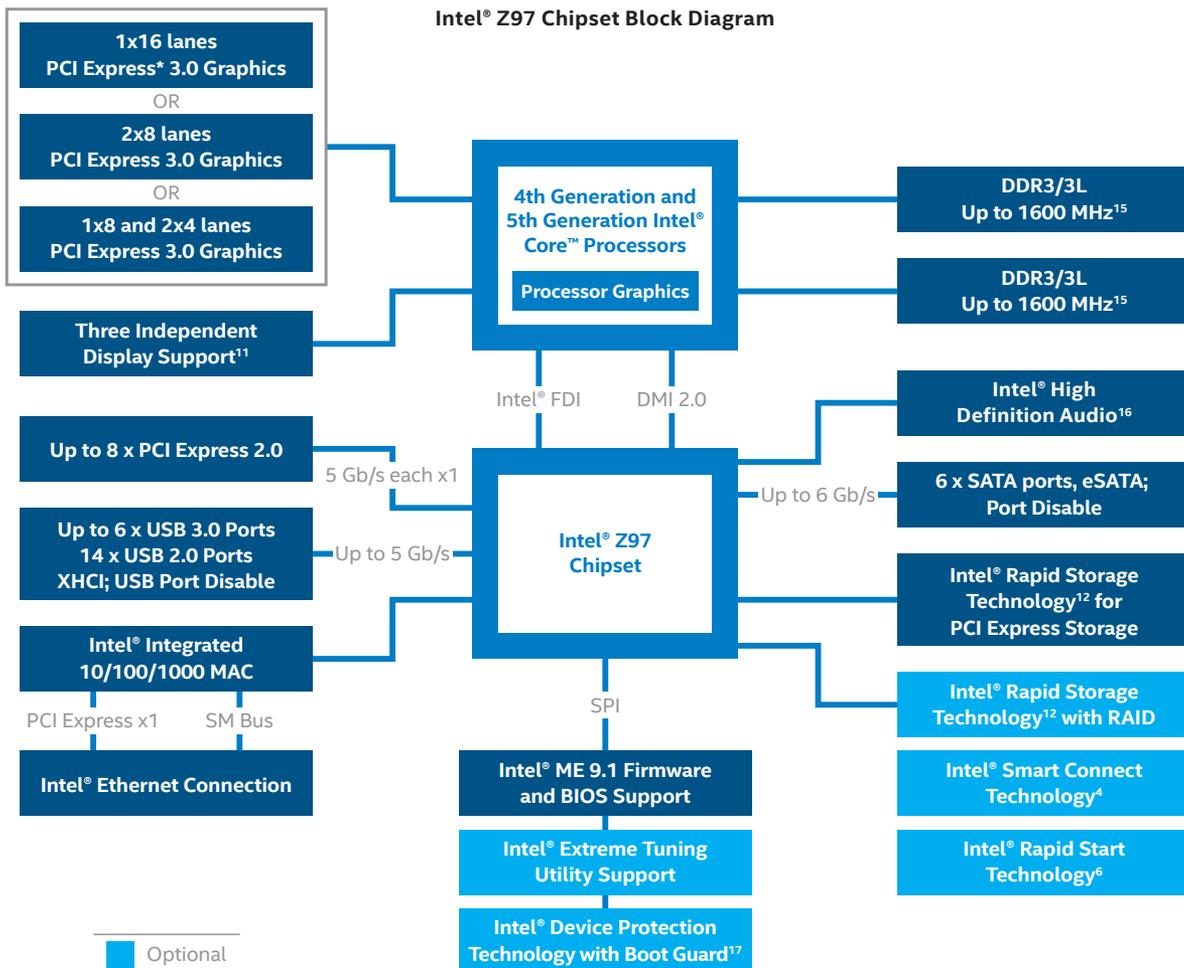
enabling a smooth 3-D experience without interruption. The Intel Z97 chipset and 4th and 5th gen Intel Core processors also come with built-in Intel® Wireless Display (Intel® WiDi),¹⁰ allowing users to view content from their desktop PC on an Intel® WiDi-enabled TV screen. Up to three independent displays¹¹ are also supported when the Intel Z97 chipset is paired with the 4th and 5th gen Intel Core processor families.

Advanced Storage Capabilities

The Intel Z97 chipset integrates several new capabilities to provide flexibility for connecting I/O devices. Integrated

USB 3.0 support helps you connect to your devices faster. In addition to enabling RAID arrays with Serial ATA (SATA) interface speeds up to 6 Gb/s, the Intel Z97 chipset and Intel® Rapid Storage Technology¹² support next-generation PCI Express* SSDs up to 67 percent faster¹³ than SATA. Intel® Rapid Recover Technology helps provide a fast, easy-to-use method for the end user to recover their data and return their system to an operational status. In addition, the Intel Z97 chipset drives lower power through enhanced link power management of the Advanced Host Controller Interface (AHCI), enables easy expandability with support for native hot plug, and

helps boost boot and multitasking performance with Native Command Queuing (NCQ). Dynamic Storage Accelerator unleashes the performance of your SSDs. It maximizes storage I/O performance by dynamically adjusting system power management policies to deliver up to a 15 percent¹⁴ performance boost compared to default power management.



INTEL® Z97 CHIPSET FEATURES AT A GLANCE

FEATURES	BENEFITS
Support for the 4th and 5th gen Intel® Core™ processors	Supports the 4th and 5th gen Intel® Core™ processors with Intel® Turbo Boost Technology 2.0, ¹ Intel® Pentium® processors, and Intel® Celeron® processors.
Overclocking ³	The Intel® Z97 chipset enables overclocking features of unlocked 4th and 5th gen Intel Core processors.
Intel® Rapid Storage Technology ¹²	With additional hard drives added, helps provide quicker access to digital photo, video, and data files, and greater data protection against a hard disk drive failure with RAID 0,5, and 10. Support for external SATA (eSATA) enables the full SATA interface speed outside the chassis, up to 3 Gb/s.
Intel® Rapid Storage Technology for PCI Express* Storage	Enables Intel® Rapid Storage Technology features with PCI Express*-based SSDs.
Intel® Rapid Recover Technology	Intel's latest data protection technology helps provide a recovery point that can be used to quickly recover a system should a hard drive fail, or there is data corruption. The clone can also be mounted as a read-only volume to allow a user to recover individual files.
Intel® High Definition Audio ¹⁶	Integrated audio support enables premium digital surround sound and delivers advanced features such as multiple audio streams and jack re-tasking.
Intel® Smart Response Technology ⁷	Implements storage I/O caching for faster response times of application startup and quicker access to user data.
Intel® Smart Connect Technology ⁴	Helps provide faster application refresh by allowing applications to be updated in a low-power state.
Intel® Rapid Start Technology ⁶	Allows quick system resume from the hibernate state.
Universal Serial Bus 3.0	Integrated USB 3.0 support provides great enhancement in performance with a design data rate of up to 5 Gb/s with up to six USB 3.0 ports.
Universal Serial Bus 2.0	High-Speed USB 2.0 support with a design data rate of up to 480 Mb/s with up to 14 USB 2.0 ports.
Serial ATA (SATA) 6 Gb/s	Next-generation high-speed storage interface supporting up to 6 Gb/s transfer rates for optimal data access with up to six SATA ports.
Serial ATA (SATA) 3 Gb/s	High-speed storage interface supporting up to six SATA ports.
Intel® Device Protection Technology with Boot Guard ¹⁷	Helps protect the system's pre-OS environment from viruses and malicious software attacks.
eSATA	SATA interface designed for use with external SATA devices. Provides a link for 3 Gb/s data speeds to eliminate bottlenecks found with current external storage solutions.
SATA Port Disable	Enables individual SATA ports to be enabled or disabled as needed. This feature helps provide added protection of data by preventing malicious removal or insertion of data through SATA ports. Especially targeted for eSATA ports.
PCI Express 2.0 Interface	Offers up to 5 GT/s for fast access to peripheral devices and networking with up to eight PCI Express 2.0 x1 ports, configurable as x2, x4, and x8 depending on desktop motherboard designs.
4th and 5th gen Intel® Core™ processors, PCI Express 3.0 Interface	Intel® Z97-based platforms enable the processor PCI Express* 3.0 port to be configurable as a 1x16, 2x8, or 1x8 and 2x4, which enables support for Intel Thunderbolt™ Technology ¹⁸ depending on desktop motherboard designs.
USB Port Disable	Enables individual USB ports to be enabled or disabled as needed. This feature helps provide added protection of data by preventing malicious removal or insertion of data through USB ports.
Intel® Integrated 10/100/1000 MAC	Support for the Intel® Ethernet Connection I217-V.
Green Technology	Manufactured with lead-free and halogen-free ¹⁹ component packages.

For more information, visit www.intel.com/content/www/us/en/chipsets/mainstream-chipsets/laptop-desktop-mainstream-chipsets.html

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- ¹ Requires a system with Intel® Turbo Boost Technology. Intel Turbo Boost Technology and Intel Turbo Boost Technology 2.0 are only available on select Intel® processors. Consult your system manufacturer. Performance varies depending on hardware, software, and system configuration. For more information, visit <http://www.intel.com/go/turbo>
- ² Available on select Intel® Core™ processors. Requires an Intel® HT Technology-enabled system. Consult your PC manufacturer. Performance will vary depending on the specific hardware and software used. For more information including details on which processors support HT Technology, visit <http://www.intel.com/info/hyperthreading>
- ³ WARNING: Altering clock frequency and/or voltage may: (i) reduce system stability and useful life of the system and processor; (ii) cause the processor and other system components to fail; (iii) cause reductions in system performance; (iv) cause additional heat or other damage; and (v) affect system data integrity. Intel has not tested, and does not warrant, the operation of the processor beyond its specifications. Intel assumes no responsibility that the processor, including if used with altered clock frequencies and/or voltages, will be fit for any particular purpose. For more information, visit <https://www.sst.intel.com/content/www/us/en/gaming/overclocking-intel-processors.html>. Altering PC memory frequency and/or voltage may (i) reduce system stability and use life of the system, memory and processor; (ii) cause the processor and other system components to fail; (iii) cause reductions in system performance; (iv) cause additional heat or other damage; and (v) affect system data integrity. Intel assumes no responsibility that the memory, included if used with altered clock frequencies and/or voltages, will be fit for any particular purpose. Check with memory manufacturer for warranty and additional details.
- ⁴ Intel® Smart Connect Technology requires a select Intel® processor, Intel® software and BIOS update, Intel® Wireless adapter, and Internet connectivity. Solid-state memory or drive equivalent may be required. Depending on system configuration, your results may vary. Contact your system manufacturer for more information.
- ⁵ Intel® Remote Wake Technology requires a select Intel® processor, Intel® LAN component, Intel® software and BIOS update, and Internet connectivity. Depending on system configuration, your results may vary. Contact your system manufacturer for more information.
- ⁶ Requires a select Intel® processor, Intel® software and BIOS update, and a Solid-State Drive (SSD) or hybrid drive. Depending on system configuration, your results may vary. Contact your system manufacturer for more information.
- ⁷ Intel® Smart Response Technology requires a Intel® Core™ processor, select Intel® chipset, Intel® Rapid Storage Technology software version 12.5 or higher, and a solid state hybrid drive reporting at least 16 GB capacity and supporting SATA-IO hybrid information feature. Depending on system configuration, your results may vary. Contact your system manufacturer for more information.
- ⁸ Built-in visual features are not enabled on all PCs and optimized software may be required. Check with your system manufacturer. Learn more at <http://www.intel.com/go/biv>
- ⁹ Viewing stereo 3-D content requires 3-D glasses and a 3-D-capable display. Physical risk factors may be present when viewing 3-D material.
- ¹⁰ Requires an Intel® Wireless Display-enabled system, compatible adapter and TV. 1080p and Blu-Ray™ or other protected content playback only available on select Intel® processor-based systems with built-in visuals enabled, a compatible adapter and media player, and supporting Intel® WiDi software and graphics driver installed. Consult your PC manufacturer. For more information, see www.intel.com/go/widi
- ¹¹ Requires the use of a 4th generation or 5th generation Intel® Core™ processor. This feature is dependent on your system configuration.
- ¹² Requires a select Intel® processor, enabled chipset, and Intel® Rapid Storage Technology (Intel® RST) software.
- ¹³ Results have been estimated based on internal Intel analysis and are provided for informational purposes only. The percentage was derived from the measurement of theoretical interface speed comparison of Serial ATA and PCI Express*. Any difference in system hardware or software design or configuration may affect actual performance. Hardware and/or software constraints may cause performance to be lower.
- ¹⁴ Dynamic Storage Accelerator performance is dependent upon several factors including workload, storage configuration, operating system, and CPU C-state transition efficiency. Intel analysis has found that Dynamic Storage Accelerator performance mode, 2 SSD RAID 0 provides up to a 15 percent performance gain as compared to default power management. Test configuration: 3 GHz processor, 2 x 2 GB @ 1333 MHz RST 12.0.0.10750S HDD: Western Digital Black WD2002FAEX 2 TB; Intel® SSD 320 Series; OS Tested: RAID 0, Two Disk; Windows® 7 SP1 build 7601; Benchmark software: PCMark® Vantage 1.0.2 patch 1901.
- ¹⁵ DDR3L memory supported at 1.5V only.
- ¹⁶ Requires an Intel® HD Audio enabled system. Consult your PC manufacturer for more information. Sound quality will depend on equipment and actual implementation. For more information about Intel® HD Audio, refer to <http://www.intel.com/design/chipsets/ndaudio.htm>
- ¹⁷ No computer system can provide absolute security. Requires an enabled Intel® processor, enabled chipset, firmware, software and may require a subscription with a capable service provider (may not be available in all countries). Intel assumes no liability for lost or stolen data and/or systems or any other damages resulting thereof. Consult your system or service provider for availability and functionality.
- ¹⁸ As compared to other PC I/O connection technologies including eSATA, USB, and IEEE 1394 Firewire*. Performance will vary depending on the specific hardware and software used. For more information, visit <http://www.intel.com/technology/io/thunderbolt>
- ¹⁹ Applies only to brominated and chlorinated flame retardants (BFRs/CFRs) and PVC in the final product. Intel components as well as purchased components on the finished assembly meet JS-709A requirements, and the PCB/Substrate meet IEC 61249-2-21 requirements. The replacement of halogenated flame retardants and/or PVC may not be better for the environment.
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