Product Brief

Intel® X58 Express Chipset

Highest performing desktop platform for extreme gamers and demanding enthusiasts

Desktop PC platforms based on the Intel® X58 Express Chipset and Intel® Core™ i7 processor family drive breakthrough gaming and digital media content creation performance with state-of-the-art technology transitions targeting extreme gamers, demand enthusiasts and mainstream PC users.

The Intel X58 Express Chipset

The Intel X58 Express Chipset continues to push innovation with capabilities designed to deliver quality, performance and headroom The Intel X58 Express Chipset achieves this performance by supporting the latest Intel® Core™ i7 family of processors at 6.4 GT/s and 4.8 GT/s speeds via the Quick Path Interconnect (QPI), and enabling increased system bandwidth by supporting industry leading technologies, such as PCI Express 2.0 graphics, Intel® Turbo Memory and support for Intel® High-Performance Solid State drives.

PCI Express* 2.0

Intel's high-end desktop chipset continues support for PCI Express 2.0 and adds flexibility with support of dual x16 and up to quad x8 graphics card configurations and combinations in between. The greatly improved 32GB/s of graphics bandwidth capability enables much higher levels of performance on graphics intensive applications such as high end gaming and video rendering for digital content creation.

intel
X58
EXPRESS CHIPSET

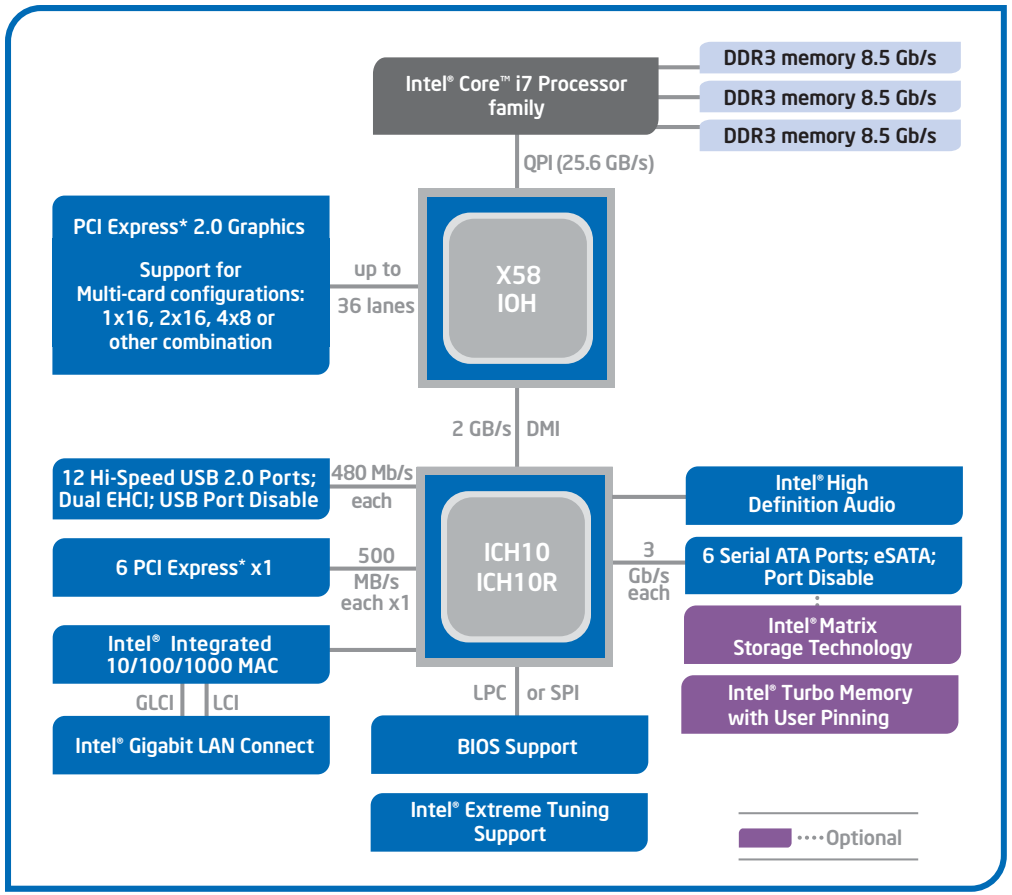
Faster System Performance

With the growing imbalance between processor and memory performance, it is critical to optimize the memory controller design to obtain the maximum possible performance from the memory subsystem. The transition of the integrated memory controller (iMC) into the processor significantly increases overall system performance through the optimization of available bandwidth along with reduction of memory access latency.
The Intel® CoreTM i7 family of processors brings triple channel DDR3 memory technology support. The DDR3 SDRAM devices operating at 1066 MHz, offer peak data transfer rates of up to 25.6 GB/s (when operated in triplel-channel interleaved mode), enabling the platform to take advantage of the higher bandwidth, faster system performance, and higher performance per watt at 1066MHz[2].

Intel® I/O Controller Hub 10 (Intel® ICH10 and Intel® ICH10R)

The Intel® ICH10 I/O controller hub of the Intel X58 Express Chipset integrates several capabilities to provide flexibility for connecting I/O devices.

- **Intel® Matrix Storage Technology**[1]: Native support of external SATA ports (eSATA), combined with Intel Matrix Storage Technology (Intel® MST), provides the flexibility to add an external drive for increased data storage with up to 6 times faster performance than USB* 2.0 or IEEE 1394 400[2]. Support for eSATA enables the full SATA interface speed of up to 3 Gb/s outside the chassis. The Advanced Host Controller Interface (AHCI) provides easier expandability with support for eSATA devices and native hot plug, while boosting boot and multi-tasking performance with Native Command Queuing (NCQ). In addition, support for Command Based Port Multipliers, and RAID levels 0, 1, 5 and 10 enable greater reliability for personal data, or maximum storage performance for intensive applications.
- **Intel® Rapid Recover Technology** (when configured with ICH10R I/O controller): With the ability to instantly boot off of a clone hard drive, Intel Rapid Recover Technology provides a fast, easy to use method for the end user to recover their data and return their system to an operational status.



Intel® X58 Express Chipset Block Diagram

- **Intel® Turbo Memory**: The Intel X58 Express Chipset with the Intel ICH10R also supports Intel Turbo Memory, an innovative flash memory-based overall system performance and boot time accelerator. This feature is easily implemented using a PCI Express x1 module and can be used with any SATA Hard Drive to improve system responsiveness. Intel Turbo memory enables faster application loading and concurrent performance enhancements when used in con¬junction with Intel Matrix Storage Technology. Intel Turbo Memory, paired with the Intel X58 Express Chipset, also allows the user to easily control the applications or data in the cache using the new Intel® Turbo Memory Dashboard interface, boosting performance further.
- **Intel® Solid State Drives support**: The Intel X58 Express Chipset, when paired with Intel® X25-E Extreme and X25-M Mainstream SATA Solid State Drives (SSDs), provides a high performance solution that can enable faster overall system response, boot and resume times. With no moving parts, SSDs run cooler and quieter and are a more reliable option than hard drives. In addition, SSDs remove input/output (I/O) performance bottlenecks associated with hard disk drives that help maximize the efficiency of Intel processors, such as the new Intel Core i7 processor family.

Intel® X58 Express Chipset Features at a Glance

Feature	Benefit
Intel® QuickPath Interconnect (QPI) at 6.4 and 4.8 GT/s	Intel's latest system interconnect design increases bandwidth and lowers latency. Supports the Intel® Core™ i7-965 processor Extreme Edition and Intel® Core™ i7-940 and i7-920 processors.
PCI Express* 2.0 Interface	PCI Express 2.0 delivers up to 16GB/s bandwidth per port, providing leading-edge graphics performance and flexibility with support for dual x16 and up to quad x8 graphic card configurations, or any combinations in between. The Intel X58 IOH provides an additional 4 lanes that can be used for graphics or I/O for a total of 36 PCI Express lanes.
Intel® High Definition Audio[3]	Integrated audio support enables premium digital surround sound and delivers advanced features such as multiple audio streams and jack re-tasking.
Intel® Matrix Storage Technology[1]	With additional hard drives added, provides quicker access to digital photo, video and data files with RAID 0, 5, and 10, and greater data protection against a hard disk drive failure with RAID 1, 5, and 10. Support for external SATA (eSATA) enables the full SATA interface speed outside the chassis, up to 3 Gb/s.
Intel® Rapid Recover Technology	Intel's latest data protection technology provides a recovery point that can be used to quickly recover a system should a hard drive fail or if there is data corruption. The clone can also be mounted as a read-only volume to allow a user to recover individual files.
Intel® Turbo Memory	Intel's innovative NAND cache designed to improve the responsiveness of applications, application load times, and system boot performance. Intel Turbo Memory, paired with the Intel X58 Express Chipset, also allows the user to easily control the applications or data in the cache using the new Intel® Turbo Memory Dashboard interface, boosting performance further.
Serial ATA (SATA) 3 Gb/s	High-speed storage interface supports faster transfer rate for improved data access with up to 6 SATA ports.
eSATA	SATA interface designed for use with external SATA devices. It 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 provides added protection of data by preventing malicious removal or insertion of data through SATA ports. Especially targeted for eSATA ports.
USB Port Disable	Enables individual USB ports to be enabled or disabled as needed. This feature provides added protection of data by preventing malicious removal or insertion of data through USB ports.

For more information, visit the Intel Web site: www.intel.com/products/desktop/chipsets

1 Intel® Matrix Storage Technology requires the computer have an Intel MST-enabled Intel chipset, RAID controller in the BIOS enabled and the Intel Matrix Storage Technology software driver installed. Please consult your system vendor for more information.

2 Performance based on interface speed specifications for eSATA, USB 2.0 and Firewire 400.

3 Intel® High Definition Audio requires a system with an appropriate Intel chipset and a motherboard with an appropriate codec and the necessary drivers installed. System sound quality will vary depending on actual implementation, controller, codec, drivers and speakers. For more information about Intel® HD audio, refer to http://www.intel.com

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