

INTEL® X48 EXPRESS CHIPSET



INTEL® P45 EXPRESS CHIPSET



INTEL® G45 EXPRESS CHIPSET



PROCESSOR

INTEL® CORE™2 EXTREME PROCESSOR



INTEL® CORE™2 QUAD PROCESSOR



INTEL® CORE™2 DUO PROCESSOR



INTEL® CELERON® DUAL-CORE PROCESSOR



- Intel's highest performance desktop chipset
- Supports 1600 MHz FSB
- Intel® Extreme Memory Profile (Intel® XMP)
- Dual-channel Intel® XMP DDR3 1600 MHz memory
- 2x16 PCI Express\* 2.0 graphics
- Intel® Extreme Tuning

- Built for mainstream performance
- Supports 1333 MHz FSB
- Dual-channel DDR2 or DDR3 memory support
- 2x8 or 1x16 PCI Express\* 2.0 graphics
- Intel® Extreme Tuning

- Intel's ultimate integrated media platform
- Superior HD playback and quality
- Full hardware decode for Blu-ray\* movies
- Enhanced 3D core for mainstream gaming
- Advanced display integration
- Support for DirectX\* 10

FEATURES

- Intel® Quad-Core Technology
- Up to 1600 MHz FSB
- Intel® Core™ Microarchitecture
- Intel® HD Boost<sup>3</sup>
- Intel® Virtualization Technology<sup>4</sup>
- Intel® 64 Architecture
- Execute Disable Bit

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- Intel® Dual-Core Technology
- Up to 1333 MHz FSB
- Intel® Core™ Microarchitecture
- Intel® HD Boost<sup>3</sup>
- Intel® Virtualization Technology<sup>4</sup>
- Intel® 64 Architecture
- Execute Disable Bit

- Dual-Core Processing
- Up to 800 MHz FSB
- Intel® Virtualization Technology<sup>4</sup>
- Intel® 64 Architecture
- Execute Disable Bit

CHIPSET SUPPORT

- Intel® X48 Express Chipset
- Intel® P45 Express Chipset<sup>5</sup>

- Intel® X48 Express Chipset
- Intel® G45 Express Chipset
- Intel® G43 Express Chipset
- Intel® P45 Express Chipset
- Intel® P43 Express Chipset
- Intel® P35 Express Chipset
- Intel® G35 Express Chipset
- Intel® G33 Express Chipset
- Intel® Q33 Express Chipset
- Intel® Q35 Express Chipset

- Intel® X48 Express Chipset
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- Intel® P35 Express Chipset
- Intel® G35 Express Chipset
- Intel® G33 Express Chipset
- Intel® G31 Express Chipset
- Intel® Q33 Express Chipset
- Intel® Q35 Express Chipset
- Intel® P31 Express Chipset

- Intel® G45 Express Chipset
- Intel® G43 Express Chipset
- Intel® P45 Express Chipset
- Intel® P43 Express Chipset
- Intel® P35 Express Chipset
- Intel® G35 Express Chipset
- Intel® G33 Express Chipset
- Intel® G31 Express Chipset
- Intel® P31 Express Chipset

<sup>1</sup> 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.

<sup>2</sup> Intel® Active Management Technology requires the platform to have an Intel® AMT-enabled chipset, network hardware, and software. The platform must also be connected to a power source and an active LAN port.

<sup>3</sup> Intel® HD Boost available on 45nm processors only.

<sup>4</sup> Intel® Virtualization Technology requires a computer system with an enabled Intel® processor, BIOS, virtual machine monitor (VMM), and, for some uses, certain platform 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.

<sup>5</sup> Intel® P45 Express Chipset supports up to 1333 MHz FSB only. Intel, the Intel logo, Intel. Leap ahead., the Intel. Leap ahead. logo, Intel Core, Core Inside, Celeron, and Celeron Inside are trademarks of Intel Corporation in the U.S. and other countries.

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Intel® Express Chipset Comparison Chart



Feature	Intel® X48 Express Chipset	Intel® G45 Express Chipset	Intel® G43 Express Chipset	Intel® P45 Express Chipset	Intel® P43 Express Chipset	Intel® P35 Express Chipset	Intel® G35 Express Chipset	Intel® G33 Express Chipset	Intel® G31 Express Chipset	Intel® Q33 Express Chipset	Intel® Q35 Express Chipset
Processor Support	Intel® Core™2 Extreme, Intel® Core™2 Quad, and Intel® Core™2 Duo Processors	Intel® Core™2 Quad and Intel® Core™2 Duo Processors	Intel® Core™2 Quad and Intel® Core™2 Duo Processors	Intel® Core™2 Quad and Intel® Core™2 Duo Processors	Intel® Core™2 Quad and Intel® Core™2 Duo Processors	Intel® Core™2 Quad and Intel® Core™2 Duo Processors	Intel® Core™2 Quad and Intel® Core™2 Duo Processors	Intel® Core™2 Quad and Intel® Core™2 Duo Processors	Intel® Core™2 Duo Processor	Intel® Core™2 Quad and Intel® Core™2 Duo Processors	Intel® Core™2 Quad and Intel® Core™2 Duo Processors
FSB Speed	1600 / 1333 / 1066 / 800 MHz	1333 / 1066 / 800 MHz	1333 / 1066 / 800 MHz	1333 / 1066 / 800 MHz	1333 / 1066 / 800 MHz	1333 / 1066 / 800 MHz	1333 / 1066 / 800 MHz	1333 / 1066 / 800 MHz	1333 / 1066 / 800 MHz	1333 / 1066 / 800 MHz	1333 / 1066 / 800 MHz
DIMMs per Channel / Number of Channels	2 DIMMs / 2 Channels (1 DIMM / 1 Channel w/DDR3 1600 Intel® XMP)	2 DIMMs / 2 Channels	1 DIMM / 2 Channels	2 DIMMs / 2 Channels	2 DIMMs / 2 Channels	2 DIMMs / 2 Channels	2 DIMMs / 2 Channels	2 DIMMs / 2 Channels	1 DIMM / 2 Channels	2 DIMMs / 2 Channels	2 DIMMs / 2 Channels
Memory Performance Optimizations	Intel® Fast Memory Access	Intel® Fast Memory Access	Intel® Fast Memory Access	Intel® Fast Memory Access	Intel® Fast Memory Access	Intel® Fast Memory Access	Intel® Fast Memory Access	Intel® Fast Memory Access	Intel® Fast Memory Access	Intel® Fast Memory Access	Intel® Fast Memory Access
Memory Type / Memory Speed	DDR3 Intel XMP 1600 MHz or DDR3 up to 1333 MHz, DDR2 up to 800 MHz	DDR3 up to 1066 MHz, DDR2 up to 800 MHz	DDR3 up to 1066 MHz, DDR2 up to 800 MHz	DDR3 up to 1066 MHz, DDR2 up to 800 MHz	DDR3 up to 1066 MHz, DDR2 up to 800 MHz	DDR3 up to 1066 MHz, DDR2 up to 800 MHz	DDR2 up to 800 MHz	DDR3 up to 1066 MHz, DDR2 up to 800 MHz	DDR3 up to 1066 MHz, DDR2 up to 800 MHz	DDR3 up to 1066 MHz, DDR2 up to 800 MHz	DDR3 up to 1066 MHz, DDR2 up to 800 MHz
Integrated Graphics	N/A	Intel® GMA X4500HD	Intel® GMA X4500	N/A	N/A	N/A	Intel® GMA X3500	Intel® GMA 3100	Intel® GMA 3100	Intel® GMA 3100	Intel® GMA 3100
DirectX® Support	N/A	DirectX® 10, DirectX® 9	DirectX® 10, DirectX® 9	N/A	N/A	N/A	DirectX® 10, DirectX® 9	DirectX® 9	DirectX® 9	DirectX® 9	DirectX® 9
Additional Graphics Features	N/A	Intel® Clear Video Technology	Intel® Clear Video Technology	N/A	N/A	N/A	Intel® Clear Video Technology	Intel® Clear Video Technology	N/A	N/A	N/A
Discrete Graphics	PCI Express® 2.0 2x16	PCI Express® 2.0 1x16	PCI Express® 2.0 1x16	PCI Express® 2.0 1x16 or 2x8	PCI Express® 2.0 1x16	PCI Express® x16	PCI Express® x16	PCI Express® x16	PCI Express® x16	PCI Express® x16	PCI Express® x16
PCI Express® (ICH Only)	(6) x1	(6) x1	(6) x1	(6) x1	(6) x1	(6) x1	(6) x1	(6) x1	(6) x1	(6) x1	(6) x1
ICH Support	ICH9, ICH9R	ICH10, ICH10R	ICH10, ICH10R	ICH10, ICH10R	ICH10, ICH10R	ICH9, ICH9R	ICH8, ICH8R, ICH8DH	ICH9, ICH9R	ICH7, ICH7R, ICH7DH	ICH9	ICH9, ICH9DO
IDE / ATA Support	SATA 3 Gb/s (6 Ports), eSATA, Port Disable	SATA 3 Gb/s (6 Ports), eSATA, Port Disable	SATA 3 Gb/s (6 Ports), eSATA, Port Disable	SATA 3 Gb/s (6 Ports), eSATA, Port Disable	SATA 3 Gb/s (6 Ports), eSATA, Port Disable	SATA 3 Gb/s (6 Ports), eSATA, Port Disable	SATA 3 Gb/s (6 Ports), eSATA, Port Disable	SATA 3 Gb/s (6 Ports), eSATA, Port Disable	ATA 100 (1 Channel), SATA 3 Gb/s (4 Ports)	SATA 3 Gb/s (6 Ports), eSATA, Port Disable	SATA 3 Gb/s (6 Ports), eSATA, Port Disable
Storage Technology	Intel® Matrix Storage Technology <sup>1</sup> (RAID 0, 1, 5, 10), Intel® Rapid Recover Technology	Intel® Matrix Storage Technology <sup>1</sup> (RAID 0, 1, 5, 10), Intel® Rapid Recover Technology	Intel® Matrix Storage Technology <sup>1</sup> (RAID 0, 1, 5, 10), Intel® Rapid Recover Technology	Intel® Matrix Storage Technology <sup>1</sup> (RAID 0, 1, 5, 10), Intel® Rapid Recover Technology	Intel® Matrix Storage Technology <sup>1</sup> (RAID 0, 1, 5, 10), Intel® Rapid Recover Technology	Intel® Matrix Storage Technology <sup>1</sup> (RAID 0, 1, 5, 10), Intel® Rapid Recover Technology	Intel® Matrix Storage Technology <sup>1</sup> (RAID 0, 1, 5, 10), Intel® Rapid Recover Technology	Intel® Matrix Storage Technology <sup>1</sup> (RAID 0, 1, 5, 10), Intel® Rapid Recover Technology	Intel® Matrix Storage Technology <sup>1</sup> (RAID 0, 1)	Intel® Matrix Storage Technology <sup>1</sup> (RAID 0, 1, 5, 10), Intel® Rapid Recover Technology	Intel® Matrix Storage Technology <sup>1</sup> (RAID 0, 1, 5, 10), Intel® Rapid Recover Technology
NAND Technology	Intel® Turbo Memory	Intel® Turbo Memory	Intel® Turbo Memory	Intel® Turbo Memory	Intel® Turbo Memory	Intel® Turbo Memory	Intel® Turbo Memory	Intel® Turbo Memory	N/A	Intel® Turbo Memory	Intel® Turbo Memory
USB Ports / Controllers	12 USB 2.0 Ports, 2 EHCI Controllers, Port Disable	12 USB 2.0 Ports, 2 EHCI Controllers, Port Disable	12 USB 2.0 Ports, 2 EHCI Controllers, Port Disable	12 USB 2.0 Ports, 2 EHCI Controllers, Port Disable	12 USB 2.0 Ports, 2 EHCI Controllers, Port Disable	12 USB 2.0 Ports, 2 EHCI Controllers, Port Disable	12 USB 2.0 Ports, 2 EHCI Controllers, Port Disable	12 USB 2.0 Ports, 2 EHCI Controllers, Port Disable	8 USB 2.0 Ports	12 USB 2.0 Ports, 2 EHCI Controllers, Port Disable	12 USB 2.0 Ports, 2 EHCI Controllers, Port Disable
Audio	Intel® HD Audio	Intel® HD Audio	Intel® HD Audio	Intel® HD Audio	Intel® HD Audio	Intel® HD Audio	Intel® HD Audio	Intel® HD Audio	Intel® HD Audio, AC'97 2.3 Audio	Intel® HD Audio	Intel® HD Audio
LAN	Integrated Intel® GbE MAC	Integrated Intel® GbE MAC	Integrated Intel® GbE MAC	Integrated Intel® GbE MAC	Integrated Intel® GbE MAC	Integrated Intel® GbE MAC	Integrated Intel® GbE MAC	Integrated Intel® GbE MAC	Intel® GbE	Integrated Intel® GbE MAC	Integrated Intel® GbE MAC
Manageability	ASF 2.0	ASF 2.0	ASF 2.0	ASF 2.0	ASF 2.0	ASF 2.0	ASF 2.0	ASF 2.0	ASF 1.0, Intel® Active Management Technology <sup>2</sup> 1.0	ASF 2.0	ASF 2.0, Intel® Active Management Technology <sup>2</sup> 3.0
Intel® Quiet System Technology	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes	Yes