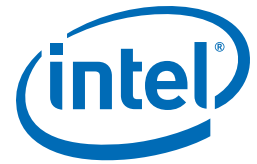


# Product Brief

## Development Kit

Embedded Computing



# Intel® Core™2 Duo Processor E8400 and Intel® Q45 Express Chipset Development Kit

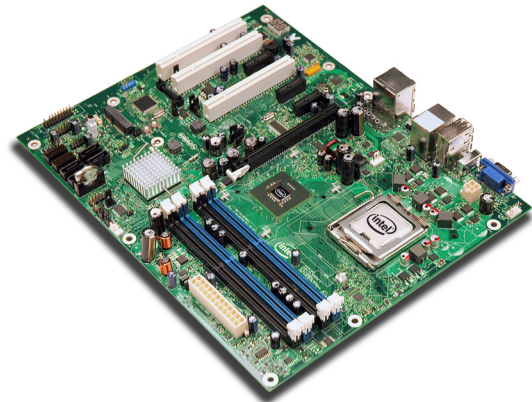
## Product Overview

Along with advancements in graphics, security and manageability, the Intel® Core™2 Duo processor E8400<sup>A</sup> and Intel® Q45 Express chipset development kit delivers innovative capabilities and enhanced power efficiencies for embedded platforms. The combination of the Intel® Core™ processor family on 45nm and 65nm process technology and the Intel® Q45 Express chipset supports high-performance, scalable systems for industrial control and automation, retail and hospitality, gaming, print imaging, digital signage, digital surveillance and network security applications.

This platform integrates the Intel® Graphics Media Accelerator 4500 (Intel® GMA 4500) and PCI Express\* (Gen 2.0) x16 external graphics. Intel® Active Management Technology<sup>1</sup> (Intel® AMT) 5.0 (available on Intel® Core™2 Quad processor Q9400<sup>A</sup> and Intel® Core™2 Duo processor E8400) supports features such as remote alerts, secured access in Microsoft NAP\* environments, access monitor, "fast call for help," and remote schedule maintenance.

The Intel® 82Q45 Graphics Memory Controller Hub (GMCH) incorporates an updated backbone architecture to optimize available bandwidth with a new 1333 MHz system bus. It also reduces memory access latency with Intel® Fast Memory Access to increase overall system performance. Other features include:

- Display support for VGA, HDCP, SDVO, DisplayPort\* and Digital Video Interface (DVI). DisplayPort interface supports up to 2560x1600 resolution and DVI supports up to 2048x1536 resolution.
- Intel® Matrix Storage Technology<sup>2</sup> (Intel® MST) features native support of external SATA ports (eSATA) to increase data storage.
- Intel® Rapid Recover Technology provides the ability to recover data and return a system to operational status.
- Intel® Quiet System Technology provides intelligent fan speed control algorithms to reduce system noise and heat.



This and other development kits from Intel provide a working system with a range of performance options that can be modified or used immediately for product development. A validated board platform lets software vendors test BIOS and operating system software.

## Product Highlights

- Supports Intel Core processor family<sup>3</sup>
- Supports 1333/1066/800 MHz system bus
- Features the Intel Q45 Express chipset consisting of the Intel® 82Q45 GMCH and Intel® I/O Controller Hub 10 DO (ICH10 DO)
- Dual-channel memory interface supports DDR3 1066 up to 8 GB max memory

## Board Peripheral Features

- Intel GMA 4500 with VGA-out support
- Direct Media Interface for high-speed, chip-to-chip interconnect
- Intel® Gigabit Ethernet controller
- Dual independent display for high-resolution
- USB 2.0 host controller with six ports

## Board Peripheral Features (continued)

- SATA host controller with six ports supporting up to 3 Gb/s
- Two (2) PCI Express x1 slots
- One (1) PCI Express (Gen 2.0) x16 graphics slot
- Six (6) audio jacks for Intel® High Definition Audio<sup>4</sup> support
- Two (2) S/PDIF optical digital audio connectors
- One (1) eSATA port
- One (1) firewire port

## Included in Kit

The Intel Core 2 Duo processor E8400<sup>Δ</sup> and Intel Q45 Express chipset development kit ships as a complete system in a chassis. It includes:

- Development board
- Intel Core 2 Duo processor E8400 at 3.0 GHz with 1333 MHz system bus<sup>3</sup>
- CPU heat sink with fan
- Two (2) 512 MB DDR3 1066 MHz DIMMs
- 80 GB HDD
- DVD drive
- ATX chassis and power supply
- Pre-installed jumpers
- Firmware hub, socketed and flashed with EFI
- Software driver and documentation CD

## Software Overview

The following independent software vendors support the Intel Core 2 Duo processor E8400 and Intel Q45 Express chipset development kit. These include:

- Operating system vendors:
  - Microsoft Windows\*
  - Red Hat Linux\*
  - SUSE Linux\*
  - Wind River VxWorks\*
- BIOS vendors:
  - American Megatrends AMIBIOS\*
  - Insyde Software
  - Phoenix Technologies, Ltd.

Intel strives to provide customers with a complete development environment supporting customer applications and operating systems. Any software provided in this development kit is subject to change without notice. Customers are encouraged to check for software updates at [intel.com/design/intarch/devkits/index.htm](http://intel.com/design/intarch/devkits/index.htm).

The chipset is supported by the Intel® Embedded Graphics Drivers and video BIOS, developed specifically for embedded products and applications ([developer.intel.com/design/intarch/SWsup/graphics\\_drivers.htm](http://developer.intel.com/design/intarch/SWsup/graphics_drivers.htm)).

## Order Information

EMBC2DQ45ELDVK

## Intel in Embedded and Communications: [intel.com/go/embedded](http://intel.com/go/embedded)

<sup>Δ</sup> Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See [http://www.intel.com/products/processor\\_number](http://www.intel.com/products/processor_number) for details.

<sup>1</sup> Intel® Active Management Technology requires the platform to have an Intel® AMT-enabled chipset, network hardware and software, as well as connection with a power source and a corporate network connection. Setup requires configuration by the purchaser and may require scripting with the management console or further integration into existing security frameworks to enable certain functionality. It may also require modifications of implementation of new business processes. Intel AMT may not be available or certain capabilities may be limited over a host OS-based VPN or when connecting wirelessly, on battery power, sleeping, hibernating or powered off. For more information, see <http://www.intel.com/technology/iamt>.

<sup>2</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>3</sup> The following processors are supported. Please contact your Intel sales representative for more information.

- Intel® Core™2 Duo processor E8400<sup>Δ</sup> at 3.0 GHz, 1333 MHz system bus
- Intel® Core™2 Quad Processor Q9400<sup>Δ</sup> at 2.26 GHz, 1333 MHz system bus
- Intel® Core™2 Duo Processor E7400<sup>Δ</sup> at 2.8 GHz, 1066 MHz system bus
- Intel® Core™2 Duo Processor E6400<sup>Δ</sup> at 2.13 GHz, 1066 MHz system bus
- Intel® Core™2 Duo Processor E4300<sup>Δ</sup> at 1.8 GHz, 800 MHz system bus
- Intel® Core™2 Duo Processor E2160<sup>Δ</sup> at 1.8 GHz, 800 MHz system bus
- Intel® Celeron® Processor 440<sup>Δ</sup> at 2.0 GHz, 800 MHz system bus

<sup>4</sup> 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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