Intel® Desktop Boards D845PT, D845BG, and D845BGSE
for the Intel® Pentium® 4 Processor

Product Brief

mPGA478 Socket

400-MHz FSB

DDR

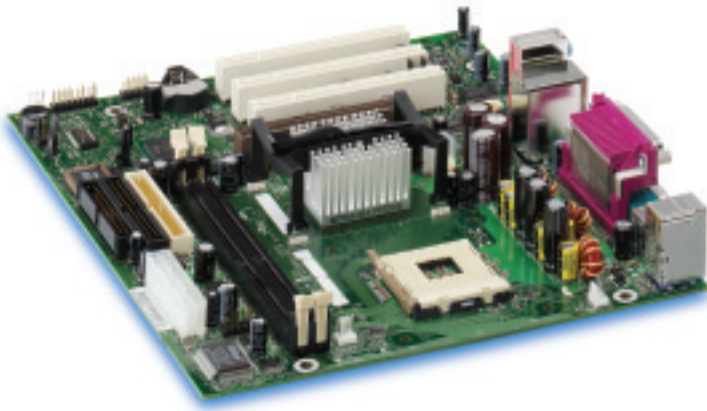## Performance for Today's Versatile Computing Environment

Intel® Desktop Boards D845PT, D845BG, and D845BGSE expand the Intel® Pentium® 4 processor platform family to include support for Double Data Rate (DDR) SDRAM memory. Featuring the Intel® 845 chipset, these desktop boards deliver enhanced platform performance that meet the unique needs of today's versatile computing environment.

Intel is firmly established as an industry leader in the development of groundbreaking desktop board technologies. Desktop Boards D845PT, D845BG, and D845BGSE continue this tradition with additional memory technology support for the Pentium 4 processor to deliver new levels of productivity.

Platform enhancements include:

- **Designed To Support up to 2GB** DDR266 SDRAM memory**—double the bandwidth of PC133 SDRAM memory.
- **AC'97 Audio with SoundMAX* with SPX and Microphone Pre-amplifier**—delivers exceptional audio performance and excellent value.
- **High-Bandwidth USB 2.0 technology*****—up to 40 times the bandwidth of USB 1.1.
- **Intel® Rapid BIOS Boot**—accelerates Power on Self Test (POST) for faster system access.
- **Instantly Available PC (suspend-to-RAM)**—enables advanced power saving features.
- **Intel® Active Monitor**—monitors system temperatures, power supply voltages, and fan speeds.

Feature-rich Products for Maximum Flexibility

With Desktop Boards D845PT and D845BG, system integrators can now design and build custom configurations based on specific technology requirements, while maintaining the flexibility to alter or upgrade later. Desktop Boards D845PT and D845BG offer the choice of either a Communications and Networking Riser (CNR) or Intel® PRO/100 Network Connection: Desktop Board D845BGSE comes with a Communications and Networking Riser. Three PCI slots on Desktop Board D845PT (microATX), six PCI slots on Desktop Board D845BG (ATX), and five PCI slots on Desktop Board D845BGSE allow further expansion of the boards' capabilities, and an AGP slot enables customized graphics solutions. Analog Devices* SoundMAX* with SPX audio delivers exceptional sound and the flexibility to upgrade to multi-channel playback using CNR cards. User satisfaction and system performance are enhanced through Intel® Rapid BIOS Boot, Ultra ATA/100 disk support, and up to seven USB 1.1 ports on Desktop Board D845PT and D845BG, or up to five USB 2.0 ports on Desktop Board D845BGSE.

Value-add Software Solutions

From e-Commerce to creating personal music libraries, business and personal users are driving demand for a variety of complex applications. To ensure that today's PCs are ready for the digital world, boxed Intel desktop boards now come with a full array of software tools and solutions, including Norton* Internet Security* for Internet security and virus protection, NTI CD-Maker 2000* for

creating full-featured CDs, SoundMAX with SPX for robust audio functionality, RealPlayer* basic to enable streaming audio and video, RealJukebox* basic for recording and listening to MP3* audio, Power Technology DFX* to enhance the audio performance of RealPlayer* basic and RealJukebox* basic and MacroMedia* Shockwave* for a rich 3D Internet experience. The Intel® Express Installer allows integrators to quickly and efficiently install the necessary software from the CD.

In addition to the full software suite, boxed Intel Desktop Boards D845PT, D845BG, and D845BGSE are unique in that they include key system integration components. These include the AGP and processor thermal solution retention mechanisms, IDE and floppy cables, back-panel I/O shield, and configuration labels. And every boxed Intel desktop board is backed by a three-year limited warranty and the comprehensive support that Intel customers rely on.[†]

Complete Solutions in the Box

Intel desktop boards based on the Intel® 845 chipset deliver competitive price points and the option of two form factors. These desktop solutions include Ultra ATA/100, AC'97 Audio, up to seven USB 1.1 ports or five USB 2.0 ports, and the option of integrated LAN or CNR. The following Intel desktop board configurations feature the Intel 845 chipset with support for DDR SDRAM memory:

Intel® Desktop Board D845PT[††]

Reference Code	Key Features
D845PT LABEPTSTD1	microATX, 1.5V 4X/2X AGP, AC'97 audio, 3-PCI slots, CNR, and up to 7 USB 1.1 ports
D845PTL LABEPTSTD2	microATX, 1.5V 4X/2X AGP, AC'97 audio, 3-PCI slots, LAN, and up to 6 USB 1.1 ports

Intel® Desktop Board D845BG

Reference Code	Key Features
D845BG LABEBGSTD1	ATX, 1.5V 4X/2X AGP, AC'97 audio, 6-PCI slots, CNR, and up to 7 USB 1.1 ports
D845BGL LABEBGSTD2	ATX, 1.5V 4X/2X AGP, AC'97 audio, 6-PCI slots, LAN, and up to 6 USB 1.1 ports
D845BGSE LABEBGSTD3	ATX, 1.5V 4X/2X AGP, AC'97 audio, 5-PCI slots, CNR, and up to 5 USB

Features	Benefits
Support for the Intel® Pentium® 4 processor	Supports 478-pin Pentium 4 processors in the mPGA478-pin package and Intel® NetBurst™ microarchitecture, including a 400-MHz system bus
Intel® 845 chipset featuring support for double-data-rate (DDR) SDRAM memory	Increased memory bandwidth over PC133 SDRAM memory
Intel® Rapid BIOS Boot	Reduced boot time enables faster system access
1.5V 4X/2X AGP connector	Supports the latest graphics technology
Two DDR SDRAM DIMM sockets	Designed to support up to 2GB** of Double-Data-Rate (DDR) SDRAM memory
Ultra ATA/100	Enables fastest IDE interface for transfers to storage devices
Three PCI slots (Intel® Desktop Board D845PT), six PCI slots (Intel® Desktop Board D845BG), or five PCI slots (Intel® Desktop Board D845BGSE)	Expansion slots for custom system configurations and future add-in card upgrades
Seven USB 1.1 ports (Desktop Board D845PT or D845BG)	Two dual-stack rear connectors, header for two front-panel USB connectors, and optional CNR connector
Five USB 2.0 ports (Desktop Board D845BGSE)	One dual-stack rear connector, header for two front panel USB connectors, and CNR connector
Communication and Networking Riser (CNR) support (optional on Desktop Board D845PT and D845BG)	Plug-and-play technology designed to support integrated LAN, HPNA, modem or audio cards for overall system cost savings and flexibility
Integrated Intel® PRO/100 network connection, utilizing Intel® 82562ET LAN (optional—not available with Desktop Board D845BGSE)	On-board 10/100-Mbps Ethernet LAN connectivity
AC'97 Audio with SoundMAX* with SPX and microphone pre-amplifier	Exceptional audio performance and excellent value
Instantly available PC (suspend-to-RAM)	Power-management mode reduces PC power consumption and provides immediate PC access using advanced wake-up logic
Hardware management ASIC	Allows remote monitoring of system conditions for lower total cost of ownership
Three-year limited warranty†	Expanded investment protection

Boxed Intel® Desktop Boards D845PT, D845BG, and D845BGSE Solution includes:

- Desktop Board
- ATX-compliant I/O shield
- Retention mechanism for processor thermal solution
- Floppy and IDE cables
- AGP retention mechanism
- Board and back-panel I/O layout stickers
- Quick Start Guide
- CD-ROM featuring:
  - Intel® Express Installer
  - Norton* Internet Security*
  - Intel® Active Monitor
  - SoundMAX* with SPX
  - RealPlayer* Basic and RealJukebox* Basic
  - NTI CD-Maker 2000*
  - MacroMedia* Shockwave*
  - Power Technology DFX*
  - Software Drivers
  - Product Guide
  - Windows XP* Ready
  - Desktop Board Three-year Limited Warranty†

Intel® Desktop Boards D845PT, D845BG, and D845BGSE Technical Specifications

Processor

Processors Supported (via mPGA478 connector)	Intel® Pentium® 4 processors with Intel® NetBurst™ microarchitecture including a 400-MHz system bus in the mPGA478-pin package and supporting frequencies starting at 1.4 GHz
Intel® 845 Chipset	Intel® 82845 Memory Controller Hub (MCH) with Accelerated Hub Architecture bus Intel® 82801BA I/O Controller Hub (ICH2) with Accelerated Hub Architecture bus Intel® 82802AB Firmware Hub (FWH)
Memory Controller Hub (MCH)	Designed to support up to 2GB (w/512-Mb technology) of DDR266 SDRAM memory
ICH2 I/O Controller Hub	Ultra ATA/66/100 Ultra DMA/33 Up to six PCI request-grant pairs for support of up to six PCI bus masters
I/O Features	Integrated super I/O LPC bus controller Six (Desktop Board D845BG), three (Desktop Board D845PT), or five (Desktop Board D845BGSE) PCI local bus slots Communication and Networking Riser (CNR) (optional), shared with PCI slot Power management support for ACPI 1.0 PC 99 and PC 99A compliance
USB 1.1 (Desktop Board D845PT and Desktop Board D845BG)	Integrated ICH2 controllers with an additional SIO hub • Four back-panel ports (two dual stacks) • Two front-panel ports (header requiring cable to front panel) • One port routed to CNR card (optional)
USB 2.0 (Desktop Board D845BGSE only)	NEC mPD720100 USB 2.0 Host Controller • Two back-panel ports (one dual stack) • Two front-panel ports (header requiring cable to front panel) • One port routed to CNR card

Firmware Hub

System BIOS	4-Mb Flash EEPROM with Intel®/AMI* BIOS featuring plug-and-play, IDE drive auto-configure Advanced configuration and power interface V1.0b, DMI 2.0, multilingual support
Intel® Rapid BIOS Boot	Optimized POST for faster access to PC from power-on

System Memory

Memory Capacity	Two 184-pin DIMM connectors supporting up to two double-sided DIMMS
Memory Type	Double-Data-Rate (DDR266 or DDR200) SDRAM in 64Mb, 128Mb, 256Mb and 512Mb technologies
Memory Voltage	2.5V

Hardware Management Features

	Voltage and temperature sense Fan-sensor inputs used to monitor fan activity

Wake-Up From Network

	Wired for Management (WfM) 2.0 compliant Support for system wake up using an add-in network interface card with remote wake-up capability or PCI

Expansion Capabilities

	Three (Desktop Board D845PT), six (Desktop Board D845BG), or five (Desktop Board D845BGSE) PCI bus add-in card connectors (PCI local bus Specification Revision 2.2) One Communication and Networking Riser (CNR) connector shared with PCI slot 3 (Desktop Board D845PT), PCI slot 6 (Desktop Board D845BG), or PCI slot 5 (Desktop Board D845BGSE) One 1.5V 4X/2X AGP port connector

Jumpers and Front-Panel Connectors

Jumpers	Single configuration jumper design Jumper access for BIOS configuration mode
Front Panel Connector	Reset, Hard Drive LED, Power LEDs, power on/off, standby header, IR port, Aux LED

Mechanical

Board Style	Desktop Board D845PT—MicroATX 1.0-compliant Desktop Board D845BG—ATX 2.03-compliant Desktop Board D845BGSE—ATX 2.03-compliant
Board Size	Desktop Board D845PT—9.6" x 8.2" Desktop Board D845BG—12.0" x 8.2" Desktop Board D845BGSE—12.0" x 8.2"

Baseboard Power

Requirements	Desktop Board D845PT—ATX12V or SFX12V Desktop Board D845BG—ATX12V Desktop Board D845BGSE—ATX12V

Environment

Operating Temperature	0° C to +55° C
Storage Temperature	-40° C to +70° C

Regulations

Safety Regulations

U.S. and Canada	UL 1950—CSA 950-95
U.S. and Canadian recognition component marks	
Europe	UL classified to IEC 950

EMI/RFI regulations: *Intended for use in systems meeting the following EMI/RFI regulations:*

U.S.	FCC Class B (DofC—Cover off testing)
Canada	IC Class B
Europe	EU Class B (Res, Com, Light Industry)
Japan	VCCI, Class B (ITE)

Power requirements vary. Complies with US CRF via EN55022 + 6 db in system configurations with an open chassis and EU Directive 89/336/EEC and use via EN55022 and EN50082-1 in a representative chassis.

Ordering Information—See Intel's Web site at www.intel.com

For the most current product information available, visit Intel's Web site at:
developer.intel.com/design/motherbd/

Order Number: 284345-002
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