



Intel® Desktop Board D945GNT Technical Product Specification

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The Intel® Desktop Board D945GNT may contain design defects or errors known as errata that may cause the product to deviate from published specifications. Current characterized errata are documented in the Intel Desktop Board D945GNT Specification Update.

Revision History

Revision	Revision History	Date
-001	First release of the Intel® Desktop Board D945GNT Technical Product Specification.	May 2005

This product specification applies to only the standard Intel Desktop Board D945GNT with BIOS identifier NT94510J.86A.

Changes to this specification will be published in the Intel Desktop Board D945GNT Specification Update before being incorporated into a revision of this document.

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Preface

This Technical Product Specification (TPS) specifies the board layout, components, connectors, power and environmental requirements, and the BIOS for the Intel® Desktop Board D945GNT. It describes the standard product and available manufacturing options.

Intended Audience

The TPS is intended to provide detailed, technical information about the Desktop Board D945GNT and its components to the vendors, system integrators, and other engineers and technicians who need this level of information. It is specifically *not* intended for general audiences.

What This Document Contains

Chapter	Description
1	A description of the hardware used on the Desktop Board D945GNT
2	A map of the resources of the Desktop Board
3	The features supported by the BIOS Setup program
4	A description of the BIOS error messages, beep codes, and POST codes

Typographical Conventions

This section contains information about the conventions used in this specification. Not all of these symbols and abbreviations appear in all specifications of this type.

Notes, Cautions, and Warnings

NOTE

Notes call attention to important information.

4 INTEGRATOR'S NOTES

Integrator's notes are used to call attention to information that may be useful to system integrators.

CAUTION

Cautions are included to help you avoid damaging hardware or losing data.

WARNING

Warnings indicate conditions, which if not observed, can cause personal injury.

Other Common Notation

#	Used after a signal name to identify an active-low signal (such as USBP0#)
(NxnX)	When used in the description of a component, N indicates component type, xn are the relative coordinates of its location on the Desktop Board D945GNT, and X is the instance of the particular part at that general location. For example, J5J1 is a connector, located at 5J. It is the first connector in the 5J area.
GB	Gigabyte (1,073,741,824 bytes)
GB/sec	Gigabytes per second
Gbits/sec	Gigabits per second
KB	Kilobyte (1024 bytes)
Kbit	Kilobit (1024 bits)
kbits/sec	1000 bits per second
MB	Megabyte (1,048,576 bytes)
MB/sec	Megabytes per second
Mbit	Megabit (1,048,576 bits)
Mbit/sec	Megabits per second
xxh	An address or data value ending with a lowercase h indicates a hexadecimal value.
x.x V	Volts. Voltages are DC unless otherwise specified.
*	This symbol is used to indicate third-party brands and names that are the property of their respective owners.

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1 Product Description

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1.1 Overview

1.1.1 Feature Summary

Table 1 summarizes the major features of the board.

Table 1. Feature Summary

Form Factor	ATX (12.00 inches by 9.60 inches [304.80 millimeters by 243.84 millimeters])
Processor	Support for an Intel® Pentium® 4 processor in an LGA775 socket with a 1066, 800, or 533 MHz system bus
Memory	<ul style="list-style-type: none"> • Four 240-pin DDR2 SDRAM Dual Inline Memory Module (DIMM) sockets • Support for DDR2 667, DDR2 533, or DDR2 400 MHz DIMMs • Support for up to 4 GB of system memory
Chipset	Intel® 945G Chipset, consisting of: <ul style="list-style-type: none"> • Intel® 82945G Graphics Memory Controller Hub (GMCH) • Intel® 82801G I/O Controller Hub (ICH7)
Video	Intel® GMA950 onboard graphics subsystem
Audio	Refer to Table 2 on page 11 for a description of audio subsystem options
Legacy I/O Control	Legacy I/O controller for diskette drive, serial, parallel, and PS/2* ports
USB	Support for USB 2.0 devices
Peripheral Interfaces	<ul style="list-style-type: none"> • Eight USB ports • One serial port • One parallel port • Four Serial ATA interfaces • One Parallel ATA IDE interface with UDMA 33, ATA-66/100 support • One diskette drive interface • PS/2 keyboard and mouse ports
LAN Support	Refer to Table 2 on page 11 for a description of LAN subsystem options.
BIOS	<ul style="list-style-type: none"> • Intel® BIOS (resident in the SPI Flash device) • Support for Advanced Configuration and Power Interface (ACPI), Plug and Play, and SMBIOS
Expansion Capabilities	<ul style="list-style-type: none"> • Four PCI Conventional* bus connectors • Two PCI Express* x1 bus add-in card connectors • One PCI Express x16 bus add-in card connector
Instantly Available PC Technology	<ul style="list-style-type: none"> • Support for PCI Local Bus Specification Revision 2.3 • Support for PCI Express Revision 1.0a • Suspend to RAM support • Wake on PCI, RS-232, front panel, PS/2 devices, and USB ports
Hardware Monitor Subsystem	<ul style="list-style-type: none"> • Hardware monitoring and fan control ASIC • Voltage sense to detect out of range power supply voltages • Thermal sense to detect out of range thermal values • Three fan connectors • Three fan sense inputs used to monitor fan activity • Fan speed control

1.1.2 Manufacturing Options

Table 2 describes the manufacturing options. Not every manufacturing option is available in all marketing channels. Please contact your Intel representative to determine which manufacturing options are available to you.

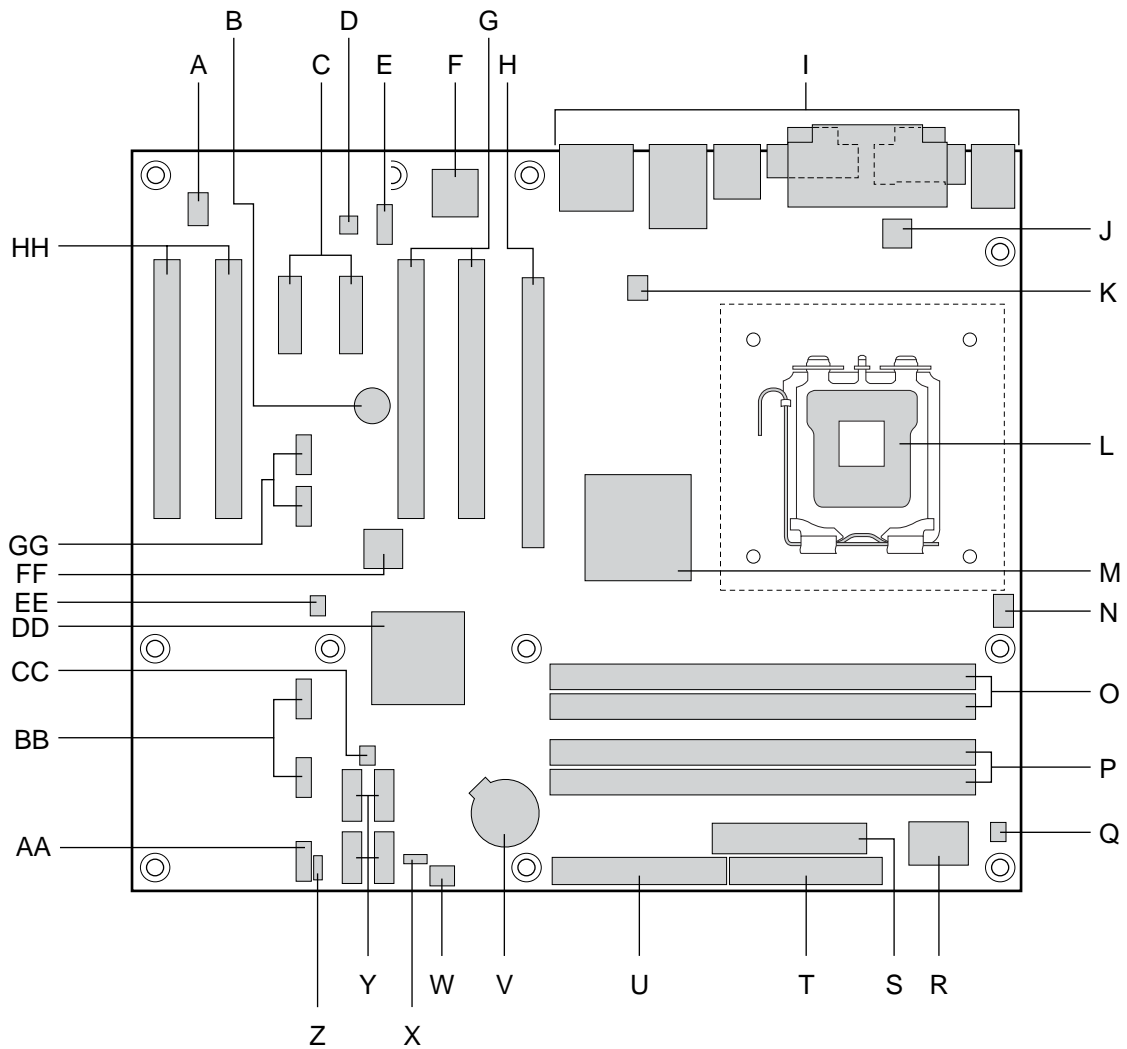
Table 2. Manufacturing Options

Audio Subsystem	Intel® High Definition Audio subsystem in one of the following configurations: <ul style="list-style-type: none"> 8-channel (7.1) audio subsystem with five analog audio outputs and two S/PDIF digital audio outputs (coaxial and optical) using the Sigmatel* 9223 audio codec 6-channel (5.1) audio subsystem with three analog audio outputs using the Sigmatel 9220 audio codec
Auxiliary fan connector	Additional fan connector for use in larger chassis
IEEE-1394a Interface	IEEE-1394a controller and three IEEE-1394a connectors (one back panel connector, two front-panel connectors)
LAN subsystem	The board provides one of the following: <ul style="list-style-type: none"> Gigabit (10/100/1000 Mbps/sec) LAN subsystem using the Intel® 82573E/82573V/82574V Gigabit Ethernet Controller 10/100 Mbps/sec LAN subsystem using the Intel® 82562GX/82562GZ Platform LAN Connect (PLC) device
SATA RAID	Intel® 82801GR I/O Controller Hub (ICH7-R) for RAID support (levels 0,1, 0+1, and 5) on the SATA interface
SCSI Hard Drive Activity LED Connector	Allows add-in hard drive controllers (SCSI or other) to use the same LED as the onboard IDE controller
Trusted Platform Module (TPM), revision 1.2	A component that enhances platform security

For information about	Refer to
Available configurations for the board	Section 1.2, page 15

1.1.3 Board Layout

Figure 1 shows the location of the major components.



OM17738

Figure 1. Board Components

Table 3 lists the components identified in Figure 1.

Table 3. Board Components Shown in Figure 1

Item/callout from Figure 1	Description
A	Auxiliary fan connector (optional)
B	Speaker
C	PCI Express x1 bus add-in card connectors [2]
D	Audio codec
E	Front panel audio connector
F	Ethernet device
G	PCI Conventional bus add-in card connectors [2]
H	PCI Express x16 bus add-in card connector
I	Back panel connectors
J	+12V power connector (ATX12V)
K	Rear chassis fan connector
L	LGA775 processor socket
M	Intel 82945G GMCH
N	Processor fan connector
O	DIMM Channel A sockets [2]
P	DIMM Channel B sockets [2]
Q	SCSI LED connector (optional)
R	Legacy I/O controller
S	Power connector
T	Diskette drive connector
U	Parallel ATE IDE connector
V	Battery
W	Front chassis fan connector
X	BIOS Setup configuration jumper block
Y	Serial ATA connectors [4]
Z	Auxiliary front panel power LED connector
AA	Front panel connector
BB	Front panel USB connectors [2]
CC	Chassis intrusion connector
DD	Intel 82801G I/O Controller Hub (ICH7)
EE	SPI flash device
FF	IEEE-1394a controller (optional)
GG	Front panel IEEE-1394a connectors (optional) [2]
HH	PCI Conventional bus add-in card connectors [2]

