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## Endura TP945GM

### Endura TP945GM Long-life Mini-ITX Express Motherboard

#### HIGH PERFORMANCE

The Endura TP945GM mini-ITX delivers exceptional performance with Intel's latest Core™ Duo T2500 2.0GHz embedded processor. Support for Intel® Celeron® M, LV and ULV processors also provides cost effective and ultra-low power options.

The Intel® 945GM Express chipset has a 667MHz front-side bus and supports dual-channel DDR2-667 DIMM memory which enables a 25% higher data rate compared to the previous generation. The integrated Intel® Graphics Media Accelerator 950 delivers exceptional 3D graphics performance, 2X that of the previous generation.

#### LOW POWER

The Endura TP945GM is optimized for use with the Intel® Core® Duo processor T2500 with a thermal design power (TDP) of 31W and the Intel® Core® Duo processor L2400 with a TDP of 15W. Use of the Intel® Celeron® M ULV 423 BGA processor enables an even lower TDP of just 5.5W. This delivers up to 28% less average power consumption compared to the previous generation. With extended temperature operation up to 70°C, the Endura TP945GM is ideal for use in rugged, space constrained applications with demanding thermal performance characteristics. Components are also selected for a more ruggedized design to support embedded applications running 24 / 7.

#### HIGHLY INTEGRATED

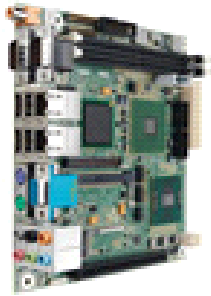
With the integrated Intel® GMA 950 graphics controller, dual independent video support, Intel® High Definition Audio with 7.1 surround sound and interfaces for VGA, LVDS, DVI (via a Media Expansion Card), TV-out (composite, component, S-video) and S/PDIF digital audio output, the Endura TP945GM is well suited to all types of multi-media applications.

#### LONG LIFE

With a projected life time of up to 7 years, the Endura TP945GM is designed for the needs of embedded system designers. This is backed up by strong engineering support, sustaining and full product life cycle management from RadiSys.

#### ROHS COMPLIANT

The Endura TP945GM is fully RoHS 6 compliant to meet the latest legislative and environmental standards.



#### FEATURE SUMMARY

- Enables customers to quickly develop next-generation systems with high performance, low power consumption and long life.
- The Mobile Intel 945GM Express chipset has a 667MHz front side bus and supports up to 4GB of dual channel, DDR2-667 memory for enhanced performance.

# Endura TP945GM Specifications

FEATURE	FUNCTION	SPECIFICATION
FORM FACTOR	Size	Mini-ITX motherboard, 6.7" x 6.7", 170mm x 170mm, 10-layer PCB
	Processor	Supports Intel® Core Duo™ and Celeron® M, LV, and ULV processors
PROCESSOR	Socket	PGA-478 CPU socket and support for BGA-479 CPUs
	FSB	667MHz and 533MHz system bus
	Chipset	Intel® 945GM Express chipset with Intel® ICH7M
MEMORY	Type	Two sockets for DDR2-667, DDR2-553 and DDR2-400 DIMM modules
	Capacity	Up to 4GB of system memory (3.2GB approx available for system memory)
	Performance	Dual-Channel memory support
VIDEO	Type	Intel® Graphics Media Accelerator 950 integrated video
		Supports dual independent video outputs
	Resolution	VGA: 2048 x 1536 at 75Hz and 32-bit color, LVDS: 1600 x 1200
	Graphics Acceleration	x16 PCI Express graphics slot with support for Media Expansion Cards (ADD2+)
	Video Outputs	VGA, 18-bit dual channel LVDS, TV output header
	TV Output	Header for Composite, Component and S-Video outputs
AUDIO	Type	Intel® High Definition Audio using Sigmatel STAC9220 eight channel CODEC
	Connectors	6 audio jacks for 7.1 surround sound
		On-board CD-ROM audio input header
		S/PDIF digital audio output
ETHERNET	Controller	Single or dual Broadcom BCM5789 Gigabit Ethernet controllers
EXPANSION	PCI Express	x16 PCI Express graphics slot – supports x1 PCI Express cards
	PCI	Mini-PCI Type IIIA card socket
	CompactFlash	Type I socket

	PCMCIA	Type II socket
<b>POWER MANAGEMENT</b>	ACPI	ACPI 3.0 supporting states S0, S3 (suspend to RAM), S4 and S5
<b>SYSTEM MANAGEMENT</b>	System Monitoring	Voltage, temperature and fan monitoring (3 fans)
	Lithium cell voltage monitoring	
	Automatic fanspeed control based on thermal monitoring	
	Watchdog	Programmable watchdog timer
	SMBus	SMBus header
<b>POWER SUPPLY</b>	Type	Support for hard- and soft- switched power supplies
	Connector	Standard 24-pin ATX power supply connector with an additional 4-pin ATX 12V connector
<b>BATTERY</b>	Lithium coin cell (5 years operating life typical)	
<b>BIOS</b>	Phoenix BIOS TrustedCore™ - includes network boot and PXE	
	Customizable logo and BIOS settings	
<b>I/O</b>	USB	Eight USB 2.0 ports – four on rear I/O panel and four on headers
	GPIO	13-bit General Purpose I/O header with an additional PWM signal
	Serial Ports	Four RS232 serial ports – two on rear I/O panel and two on headers
	IrDA	IrDA compliant infrared interface with support for SIR and ASK
<b>DISKS</b>	SATA	Two SATA 1.5Gbps ports
	IDE	One Ultra ATA100 interface with 44-way slim type header
<b>SECURITY</b>	TPM	Header connector for a Trusted Platform Module (TPM) 1.2
<b>OPERATING SYSTEMS</b>	Windows XP	
	Windows XPe	
	Windows Vista	
	Linux	
<b>SAFETY COMPLIANCE</b>	Evaluated in accordance with UL60950, EN60950 and IEC60950	
<b>EMC COMPLIANCE</b>	Evaluated in accordance with EN55022, EN55024 and FCC Part 15 Class B	

## PHYSICAL SPECIFICATIONS

**ENVIRONMENT**

Temperature	Operating	0°C to 70°C
	Storage	-40°C to 85°C
Relative Humidity	5% to 95% non-condensing	

## Ordering Information

### DESCRIPTION:

TP945GM with single Gigabit Ethernet

**PRODUCT CODE: TP1G03-0-0**

TP945GM with dual Gigabit Ethernet

**PRODUCT CODE: TP2G03-0-0**

TP945GM with dual Gigabit Ethernet and CompactFlash socket

**PRODUCT CODE: TP2GC03-0-0**

TP945GM with single Gigabit Ethernet, ULV Celeron M 423 and passive heatsink

**PRODUCT CODE: TP1G03-423-0**

Dual DVI Media Expansion Card

**PRODUCT CODE: MEC-DUAL-DVI**

I/O shield for TP945GM with single GbE

**PRODUCT CODE: IOSHLD-TP1G**

I/O shield for TP945GM with dual GbE

**PRODUCT CODE: IOSHLD-TP2G**

Standard fansink with aluminium heatsink

**PRODUCT CODE: FNSNK-TPSTD**

Higher performance fansink with copper heatsink

**PRODUCT CODE: FNSNK-TPXT**



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