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VERSALOGIC CORPORATION

LEOPARD

PC/104-*Plus* Embedded Computer



- Intel® Core™2 Duo processor
- High-performance video
- Dual gigabit Ethernet
- DDR3 RAM (up to 4 GB)
- USB 2.0 (6 ports)
- Serial I/O (5 ports)
- LPT interface
- Dual SATA interface
- HD audio
- MiniBlade™ flash socket
- eUSB flash interface
- Extended temp. version
- MIL-STD-202G shock/vibe
- SPX™ I/O expansion

Highlights

PC/104-*Plus* Form Factor
Industry standard expandable, compact, highly rugged format.

Intel Core 2 Duo Processor
Up to 2.26 GHz performance.

High-performance Video
3D video acceleration (Gen 5.0). Analog and LVDS flat panel outputs.

Network Support
Dual gigabit Ethernet with remote boot support.

System RAM
Up to 4 GB DDR3 RAM for system flexibility.

USB I/O
Six USB 2.0 ports support keyboard, mouse, and other devices.

Device I/O
Five serial ports, dual SATA interface, and HD audio.

Flash Memory
MiniBlade socket and eUSB interface for high-reliability flash storage.

Extended Temperature Version
-40° to +85°C operation for harsh environments.

MIL-STD-202G
Qualified for high shock/vibration environments.

SPX Expansion
Supports expansion with versatile SPX add-on I/O modules.

Overview

The Leopard is an embedded computer featuring an Intel 2nd generation Core 2 Duo processor. Based on the PC/104-*Plus* industry standard form factor, the Leopard supports PCI and ISA stackable expansion buses on a 4.21" by 3.78" footprint. With its combination of ultra-high performance (up to 2.26 GHz), mid-range power consumption (21.3W typ.), ruggedness, and compact size, the Leopard is an ideal embedded computer solution for medical, security, defense, transportation, and industrial markets. Potential applications include flight navigation, guidance systems, and evolving applications that rely on fast on-board processing of large amounts of data.

Like all VersaLogic products, the Leopard is designed to support OEM applications where high reliability and long-term availability are required. From application design-in support, to its 5+ year production life guarantee, the Leopard supports serious embedded applications. The Leopard is fully RoHS compliant. Customization is available, even in low OEM quantities.

Details

Driven by a 2nd generation Intel Core 2 Duo processor designed specifically for embedded applications, the Leopard runs up to 2.26 GHz. Enhanced Intel SpeedStep® technology provides dynamic processor frequency scaling to meet instantaneous performance needs while minimizing power draw and heat dissipation. This allows users to fine-tune the balance of power conservation and performance to suit their application needs.

Intel's GS45 + ICH9M chipset offers graphics core speeds up to 533 MHz for high-end graphics, advanced 3D rendering, high-definition video playback, and media acceleration for video CODECs. Analog VGA and LVDS flat panel video interfaces support flexible display configurations including Extended Desktop, Clone, and Twin display modes.

Leopard's standard on-board features include dual gigabit Ethernet, an SO-DIMM socket for up to 4 GB DDR3 RAM, six USB 2.0 ports, five serial ports, dual SATA interface, LPT interface, HD audio, and a MiniBlade socket and eUSB interface for removable flash storage. VersaLogic's SPX expansion interface creates additional access to cost-effective plug-in I/O solutions.

Available in both standard (0° to +60°C) and extended (-40° to +85°C) temperature versions; the Leopard meets MIL-STD-202G specifications for shock and vibration. The Leopard features transient voltage suppression (TVS) devices on many external connections for enhanced electrostatic discharge (ESD) protection in the field.

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RoHS

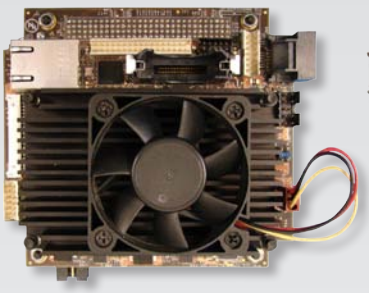
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LEOPARD

PC/104-*Plus* Embedded Computer

The Leopard includes an embedded BIOS with OEM enhancements from Phoenix Technologies. The field-reprogrammable BIOS supports custom defaults and the addition of firmbase applications for security processes, remote booting, and other pre-OS software functions. The Leopard is compatible with a variety of popular operating systems including Windows, Windows Embedded, Linux, VxWorks, and QNX.



VL-EPM-35S (Top)



VL-EPM-35S (Bottom)

Ordering Information

Model	Speed	Operating Temp.	Conformal Coating
VL-EPM-35S	2.26 GHz	0° to +60°C	None
VL-EPM-35SR*	2.26 GHz	0° to +60°C	Urethane
VL-EPM-35E	1.2 GHz	-40° to +85°C	None
VL-EPM-35ER*	1.2 GHz	-40° to +85°C	Urethane

** Special order*

Accessories

Leopard Cable Kit (VL-CKR-LEOP)	
VL-CBR-0401	6.25" ATX to SATA power adapter cable
VL-CBR-0701	19.75" SATA cable
VL-CBR-0803	12" 8-pin latching/(2) 3.5 mm stereo line in/out cable
VL-CBR-1008	ATX to 10-pin power cable
VL-CBR-1201	12-pin 2 mm latching/15-pin VGA adapter cable
VL-CBR-3406	I/O cable set and paddleboard
VL-CBR-8006	Primary I/O breakout cable
VL-HDW-105	0.6" standoff package (metric thread)

Accessories	
VL-CBR-1012	12" 2 mm 10-pin/(2) 5-pin D-sub cable
VL-CBR-1401	Cable assembly for (2) SPX modules
VL-CBR-1402	Cable assembly for (4) SPX modules
VL-CBR-2010	20" 18-bit LVDS flat panel cable (Hirose)
VL-CBR-2011	20" 18-bit LVDS flat panel cable (JAE)
VL-CBR-2012	20" 24-bit LVDS flat panel cable (Hirose)
VL-CBR-2014	LVDS to VGA adapter board
VL-CFA-2A	CompactFlash adapter (SATA)
VL-ENCL-5x	Development enclosure
VL-F15-xxxx	eUSB module (USB)
VL-F23-xxxx	MiniBlade module (USB)
VL-HDS35-320	320 GB 3.5" SATA hard drive
VL-HDW-106	0.6" standoff package (English thread)
VL-HDW-203	PC/104 board extractor tool, metal
VL-MM7-xxxx	DDR3 SDRAM module
VL-SPX-x	SPX expansion modules

Data represents standard operation at +25°C with +5V supply unless otherwise noted. Specifications are subject to change without notification. Intel, Intel Core, and SpeedStep are trademarks of Intel Corp. MiniBlade is a trademark of the SFF-SIG. SPX is a trademark of VersaLogic Corp. All other trademarks are the property of their respective owners.

SPECIFICATIONS

General	Board Size	PC/104-*Plus* compliant (dual-board set): 107 mm x 96 mm (4.21" x 3.78")
	Processor	Intel Core 2 Duo (SP9300). Up to 1066 MHz FSB. 6 MB L2 cache. Temperature protected.
	Chipset	GS45 + ICH9M
	Power Requirements	+5V running Windows XP with 1 GB RAM, dual Ethernet, keyboard, and mouse:

Model	Idle	Typical	Max
VL-EPM-35S/R	2.8A (14W)	4.3A (21.3W)	5.7A (28.5W)
VL-EPM-35E/R	2.3A (11.5W)	3.1A (15.5W)	3.9A (19.5W)

	System Reset & Hardware Monitors	Watchdog timeout. V_{CC} sensing (resets below 4.7V typ.).
	Stackable Bus	PCI: 3.3V signaling, +5V tolerant ISA: No DMA
	Other I/O Expansion	VersaLogic SPX interface
	RoHS	Compliant
Environmental	Operating Temperature	

Model	Operating Temperature
VL-EPM-35S/R	0° to +60°C
VL-EPM-35E/R	-40° to +85°C

	Storage Temperature	-40° to +85°C
	Airflow Requirements	Free air from -40° to +85°C
	Thermal Shock	5°C/min. over operating temperature
	Humidity	Less than 95%, noncondensing
	Vibration, Sinusoidal Sweep	MIL-STD-202G, Method 204, Modified Condition A: 2g constant acceleration from 5 to 500 Hz, 20 minutes per axis
	Vibration, Random	MIL-STD-202G, Method 214A, Condition A: 5.35g rms, 5 minutes per axis
	Mechanical Shock	MIL-STD-202G, Method 213B, Condition G: 20g half-sine, 11 ms duration per axis
Memory	System RAM	One SO-DIMM socket. Up to 4 GB DDR3 SDRAM.
Video	General	Integrated high-performance video. Intel GMA 4500 MHD graphics core. Analog and flat panel video interfaces support Extended Desktop, Clone, and Twin display modes. Optional video adapter card converts LVDS output to VGA for dual VGA operation.
	VRAM	Up to 512 MB shared DRAM
	Desktop Display Interface*	Standard analog output (VGA)
	OEM Flat Panel Interface	18/24-bit LVDS interface. CMOS-selectable TFT panel types.
Mass Storage	Hard Drive	Dual SATA interface (Revision 2.0)
	Flash	One MiniBlade socket (USB signaling). One eUSB interface (USB signaling).
Network Interface	Ethernet*	Dual autodetect 10BaseT/100BaseTX/1000BaseT ports
	Network Boot Option	Intel boot agent (downloadable) supports PXE protocol. Argon Managed Boot Agent (optional with royalty fee) supports PXE, RPL, NetWare, TCP/IP (DHCP, BOOTP) remote boot protocols.
Device I/O	USB*‡	Six USB 2.0/1.1 ports
	COM 1 Interface*	RS-232. 16C550 compatible. 115 Kbps.
	COM 2/3/4/5 Interface*	RS-232/422/485 selectable. 16C550 compatible. 460 Kbps.
	Audio‡	Digital HD audio in/out
Software	BIOS	Phoenix Technologies Embedded BIOS with OEM enhancements. Field reprogrammable. Support for USB keyboard/mouse and USB boot. User-configurable CMOS defaults.
	Operating Systems	Compatible with most x86 operating systems, including Windows, Windows Embedded, Linux, VxWorks, and QNX

** TVS protected port (enhanced ESD protection)*
‡ Power pins on this port are overload protected

02/21/13

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