

- Intel® Core™2 Duo processor
- SUMIT and ISA expansion
- Extended temp. version
- Gigabit Ethernet
- High-performance video
- Four serial ports
- MiniBlade™ flash socket

## Highlights

### SUMIT and PC/104™ Compatible

Supports SUMIT and ISA expansion on an EPIC 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

Gigabit Ethernet with remote boot support.

### System RAM

Up to 4 GB DDR3 RAM for system flexibility.

### USB I/O

Four USB 2.0 ports support keyboard, mouse, and other devices.

### Device I/O

Four 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 Komodo is a versatile single board computer (SBC) that leverages the ultra-high performance of an Intel Core 2 Duo processor. This robust SBC is the ideal solution for demanding industrial, medical, defense, and aerospace applications where performance and dependability are crucial design factors.

Based upon the EPIC-sized industry standard footprint, the Komodo features the SUMIT expansion interface as defined by the Small Form Factor Special Interest Group (SFF-SIG). This provides OEMs with a stackable multi-board expansion interface that supports both high- and low-speed signals. This simplifies adding both standard and custom I/O boards to the system. The Komodo expansion interfaces include PCIe, USB, LPC, SPI, SMBus, as well as ISA bus support for PC/104 modules.

Like all VersaLogic products, this SBC is designed to support OEM applications where high reliability and long-term availability are required. From application design-in to 5+ guaranteed years of production life, the Komodo provides a durable embedded computer solution with an exceptional cost of ownership. The Komodo is manufactured and tested to the highest quality standards and is fully RoHS compliant. Customization is available, even in very low quantities.

## Details

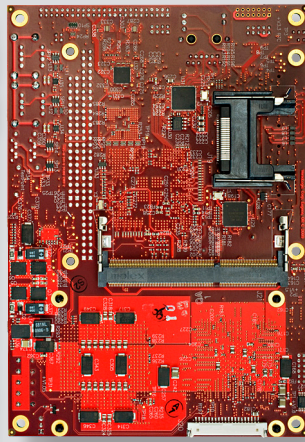
The combination of Intel's dual core processor, along with its companion chipset, provide the majority of the Komodo's features including high-speed video with LVDS and analog VGA output, four USB 2.0 ports, four serial ports, gigabit Ethernet, dual SATA interface, HD audio, and PS/2 keyboard and mouse support. The SUMIT interface provides three x1 PCIe lanes, LPC, SPI, SMBus, and four additional USB channels. The PC/104 connector provides ISA bus compatibility.

A MiniBlade socket and eUSB interface provide high-reliability flash storage, while VersaLogic's SPX expansion interface creates additional access to cost-effective plug-in I/O solutions. The Komodo supports up to 4 GB of DDR3 system memory and is designed and tested to MIL-STD-202G shock and vibration standards.

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



VL-EPICs-36S (Top)



VL-EPICs-36S (Bottom)

## Ordering Information

Model	Processor	Speed	Operating Temp.	Cooling
VL-EPICs-36S	Intel Core 2 Duo	2.26 GHz	0° to +60°C	Fan
VL-EPICs-36E	Intel Core 2 Duo	1.2 GHz	-40° to +85°C	Fan

## Accessories

VL-CBR-0401*	6.25" ATX to SATA power adapter cable
VL-CBR-0701*	19.75" SATA cable
VL-CBR-0702	19.75" SATA cable, latching
VL-CBR-0803*	12" 8-pin latching/two 3.5 mm audio cable
VL-CBR-1201*	12-pin 2 mm latching / 15-pin VGA adapter cable
VL-CBR-1401	Cable assembly for two SPX modules
VL-CBR-1402	Cable assembly for four 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-CBR-2022*	ATX to 10-pin power cable
VL-CBR-5009*	I/O cable set and paddleboard
VL-CBR-5009A	18" I/O ribbon cable
VL-CKR-KOMO	Development cable kit
VL-ENCL-5C	Development enclosure
VL-EPHs-B1x	SUMIT to USB adapter board
VL-F15-xxxx	eUSB module (USB)
VL-F23-xxxx	MiniBlade module (USB)
VL-HDS35-xxx	3.5" SATA hard drive
VL-HDW-105*	SUMIT standoff package (metric thread)
VL-HDW-106	SUMIT standoff package (English thread)
VL-MM7-xxxx	DDR3 SDRAM module
VL-SPX-x	SPX expansion modules

\* Included in VL-CKR-KOMO cable kit

SUMIT Resources		
Form Factor: SUMIT on EPIC		
	SUMIT-A	SUMIT-B
PCIe x1	1	2
PCIe x4		-
USB	4	
ExpressCard	-	
LPC	✓	
SPI/µWire	SPI	
SMBus/I <sup>2</sup> C	SMBus	
+12V	✓	
+5V	✓	✓
+5Vsb	✓	✓
+3.3V	✓	✓

## SPECIFICATIONS

<b>General</b>	Board Size	EPIC standard: 115 mm x 165 mm (4.5" x 6.5")			
	Processor	Intel Core 2 Duo (P8400). Up to 1066 MHz FSB. 3 MB L2 cache. Temperature protected.			
	Chipset	GM45 + ICH9M			
	Power Requirements	+5V running Windows XP with 1 GB RAM, Ethernet, keyboard, and mouse:			
			Idle	Typical	Max
		VL-EPICs-36S	2.5A (12.5W)	4A (20W)	5.5A (27.5W)
	VL-EPICs-36E	2.3A (11.5W)	3.1A (15.5W)	3.9A (19.5W)	
	System Reset & Hardware Monitors	Major voltage rails monitored			
	Stackable Bus	SUMIT, PC/104 (ISA)			
Expansion	VersaLogic SPX interface				
RoHS	RoHS (2002/95/CE) compliant				
<b>Environmental</b>	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			
<b>Memory</b>	System RAM	One SO-DIMM socket. Up to 4 GB DDR3 SDRAM.			
<b>Video</b>	General	Integrated high-performance video. Intel GMA 4500 MHD graphics core. Simultaneous independent analog and flat panel output capability. 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.			
<b>Mass Storage</b>	Hard Drive	Dual SATA interface (Revision 2.0)			
	Flash	One MiniBlade socket (USB or SATA signaling). One eUSB interface (USB signaling).			
<b>Network Interface</b>	Ethernet*	Autodetect 10BaseT/100BaseTX/1000BaseT port			
	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.			
<b>Device I/O</b>	USB*‡	Four USB 2.0/1.1 ports			
	COM 1/2 Interface*	RS-232. 16C550 compatible. 115 Kbps.			
	COM 3/4 Interface*	RS-232/422/485 selectable. 16C550 compatible. 460 Kbps.			
	Audio	Stereo HD audio in/out			
	Other	PS/2 keyboard and mouse. Four additional USB ports available through SUMIT interface with appropriate adapter board.			
<b>Software</b>	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

Data represents standard operation at +25°C with +5V supply unless otherwise noted. Specifications are subject to change without notification. Intel and Intel Core are trademarks of Intel Corp. PC/104 and EPIC are trademarks of the PC/104 Consortium. SUMIT and MiniBlade are trademarks of the SFF-SIG. SPX is a trademark of VersaLogic Corp.

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