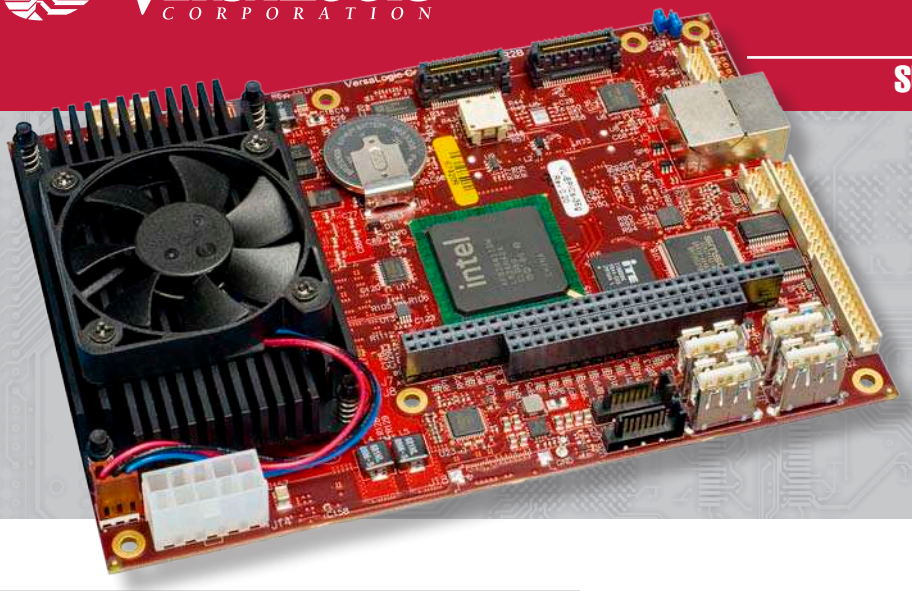
VERSALOGIC CORPORATION

# KOMODO

## SUMIT™ on EPIC™ Single Board Computer



- 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 firmbase 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.

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sumit™ RoHS

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## SUMIT on EPIC Single Board Computer



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/I²C** | SMBus | |
| **+12V** | ✓ | |
| **+5V** | ✓ | ✓ |
| **+5Vsb** | ✓ | ✓ |
| **+3.3V** | ✓ | ✓ |

## SPECIFICATIONS

| | | |
|---|---|---|
| **General** | 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 |
| **Environmental** | 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. 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. |
| **Mass Storage** | Hard Drive | Dual SATA interface (Revision 2.0) |
| | Flash | One MiniBlade socket (USB or SATA signaling). One eUSB interface (USB signaling). |
| **Network Interface** | 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. |
| **Device I/O** | 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. |
| **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*

*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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