



- 1.0 GHz Pentium M processor
- Extreme Graphics 2 video
- High-speed DDR RAM
- CompactFlash socket
- 10/100 Ethernet
- Extended temp. operation
- RoHS-compliant

## Highlights

### High-performance Processor

Pentium M 1.0 GHz performance with low power draw.

### Extreme Graphics 2 Video

Very high speed rendering and MPEG-2 support.

### SO-DIMM Memory Socket

Accommodates up to 1 GB of DDR RAM.

### On-board I/O

Two USB 2.0 ports, two COM ports (one 232/422/485 configurable), IDE interface, LPT port, audio.

### TVS Protection

Enhanced ESD resistance.

### CompactFlash Socket

Removable storage device has no moving parts.

### Watchdog Timer

Provides hardware-level safety control for application run-away conditions.

### 400 MHz processor-side bus

Improved system throughput.

### Embedded BIOS

OEM embedded features. Field-upgradeable. Customization available.

### PC/104-Plus Form Factor

Compact module is ideal for space-constrained applications.

### RoHS-compliant

Meet EU Directive 2002/95/EC.

## Overview

The Cheetah single board computer reaches a new level of sophistication for embedded product technology, integrating very high performance with an expanded feature set on the compact and rugged PC/104-Plus form factor. The advanced design of the Pentium M processor makes it suitable for a wide range of higher-end applications such as security systems, telematics, UAVs, and sophisticated communications equipment.

An impressive amount of functionality is packed into the 2-board set, including 10/100 Ethernet, two USB 2.0 ports, two COM ports, LPT, IDE, audio, and high-resolution video output. It includes a CompactFlash socket for on-board bootable media storage, TVS devices on the user I/O for enhanced ESD protection, and a watchdog timer to control application run-away conditions. The Cheetah accommodates up to 1 GB DDR system RAM in a high-retention SO-DIMM socket.

Like all VersaLogic products, this small, powerful SBC is designed to support OEM applications where high reliability and long-term availability are required. From application design-in to 5+ years production life, its quality and longevity provide a cost-effective, long-term solution. The Cheetah is manufactured and tested to the highest quality standards and is backed by a two-year limited warranty. Customization is available in as few as 100 pieces.

## Details

The Cheetah's Pentium M processor provides outstanding performance of 1.0 GHz while drawing less than 12 watts of power. The processor and chipset solution relies on three separate chips: the processor, a graphics and memory controller hub that provides fast RAM access and video output, and an I/O hub that provides PCI, IDE, USB, and audio functionality.

The Extreme Graphics 2 video built into the chipset offers outputs for LVDS flat panels and analog (CRT) monitors at resolutions up to 2048 x 1536. It supports 24-bit color, very fast rendering, and MPEG-2 decoding for full motion video. Video RAM is allocated from system memory (up to 64 MB).

With two COM ports, two USB ports (2.0), 10/100 Ethernet, LPT port, and IDE interface, the Cheetah offers more I/O options than other similar-sized SBCs. In addition, PC/104 and PC/104-Plus connectors provide support for many off-the-shelf expansion boards for added system functionality with minimal space requirements. The Cheetah also includes a number of reliability-enhancing features such as a watchdog timer and TVS devices.

The Cheetah features a General Software Embedded BIOS with OEM enhancements. The field-reprogrammable BIOS supports custom defaults and CMOS settings. Optional firmware and firmbase applications for security processes, remote booting, and other pre-OS software functions are supported. The Cheetah is compatible with a variety of popular operating systems, including Windows, QNX, VxWorks, and Linux.



### Ordering Information

VL-EPM-32t..... Intel Pentium M 1.0 GHz, Extended Temp. (RoHS)

### Accessories

VL-CBR-0501\*..... USB transition cable (RoHS)  
 VL-CBR-0803\*..... Audio cable, stereo in/out (RoHS)  
 VL-CBR-1008\*..... ATX power adapter cable (RoHS)  
 VL-CBR-1201\*..... SVGA connector cable (RoHS)  
 VL-CBR-2010..... LVDS Cable, HIROSE style (RoHS)  
 VL-CBR-2011..... LVDS Cable, JAE style (RoHS)  
 VL-CBR-2501..... Floppy connector converter (RoHS)  
 VL-CBR-4405\*..... 2 mm to 0.1" IDE adapter (RoHS)  
 VL-CBR-4406\*..... 2.5" IDE drive cable (RoHS)  
 VL-CBR-8001\*..... Primary user I/O breakout cable (RoHS)  
 VL-CKR-CHEE..... Development cable kit (RoHS)  
 VL-CDD-IDE1..... IDE CD-RW, DVD-ROM drive  
 VL-CFM-xxx..... CompactFlash module  
 VL-CF-CLIP1..... CompactFlash retention clip  
 VL-ENCL-4..... VersaTainer Ruggedized enclosure  
 VL-ENCL-5..... Development enclosure  
 VL-FDD-144U..... USB floppy drive  
 VL-HDD35-xxx..... 3.5" IDE hard drive  
 VL-HDW-101\*..... Mounting standoffs, metric thread  
 VL-MM5D-xxx..... DDR RAM module  
 VL-DEV-CD-L2..... Debian Linux Board Support Package

\*Included in VL-CKR-CHEE cable kit

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### Specifications

| Specifications           |                             |   |
|--------------------------|-----------------------------|---|
| <b>General</b>           | Processor                   | Intel Pentium M   |
|                          | Chipset                     | 855GME  |
|                          | Power Requirements          | +5.0V only:<br>12W (EPM-32t)  |
|                          | System Reset                | Watchdog timeout<br>VCC sensing (resets below 4.70V typ.)   |
|                          | Bus Speed                   | CPU PSB: 400 MHz<br>PCI, PC/104-Plus: 33 MHz<br>PC/104: 8 MHz   |
|                          | Compatibility               | PC/104: footprint compatible.<br>PC/104-Plus: supports 3.3V PCI signaling (2.2 compliant).  |
| <b>Mechanical</b>        | Board Size                  | Dual board set, 3.55" x 3.78" (90 mm x 96 mm) with 0.2" (5 mm) overhangs in the designated connector areas.                                   |
|                          | Storage Temperature         | -40° to +85°C   |
|                          | Operating Temperature       | -40° to +85°C (EPM-32t)   |
|                          | Vibration, Sinusoidal Sweep | 2g constant acceleration from 5 to 500Hz, 20 minutes per axis, MIL-STD-202G, Method 204, Modified Condition A                                 |
|                          | Vibration, Random           | .02g <sup>2</sup> /Hz (5.35g rms), 15 minutes per axis, MIL-STD-202G, Method 214A, Condition A  |
|                          | Mechanical Shock            | 30g half-sine, 11 ms duration per axis, MIL-STD-202G, Method 213B, Condition J  |
|                          | Humidity                    | Less than 95%, noncondensing.   |
| <b>Memory</b>            | System RAM Interface        | One 200-pin SO-DIMM socket. Up to 1 GB of 266 MHz PC2100 or 333 MHz PC2700 compatible DDR RAM.  |
|                          | Flash Interface             | CompactFlash socket (type I or II) with DMA support.  |
| <b>Video</b>             | General                     | Extreme Graphics 2 chip set. Uses up to 64 MB system memory. Full motion video, MPEG-2 decoder, 3-D, edge smoothing and ultra-fast rendering. |
|                          | Desktop Display Interface*  | Standard analog display interface supports 24-bit color and resolutions up to 2048 x 1536.  |
|                          | OEM Flat Panel Interface    | LVDS flat panel interface supports 24-bit color and resolutions up to 1024 x 768.   |
| <b>Network Interface</b> | Ethernet*                   | 10/100 Ethernet port. Auto-detect.  |
|                          | Network Boot Option         | Argon Managed Boot Agent. Supports PXE, RPL, NetWare, TCP/IP (DHCP, BOOTP) remote boot protocols.   |
| <b>Device I/O</b>        | USB*‡                       | Two ports USB 2.0/1.1 protocol.   |
|                          | IDE Interface               | Single channel PCI-based. Up to 2 IDE devices. ATA 100 compatible. (CompactFlash is on a separate channel)                                    |
|                          | COM 1 Interface*            | RS-232, 16C550 compatible. 115K baud max.   |
|                          | COM 2 Interface*            | RS-232/422/485, 16C550 compatible, 460K baud max.   |
|                          | LPT Interface*              | Bi-directional/EPP/ECP/floppy mode compatible.  |
|                          | Audio                       | AC'97 PCI compatible. Stereo line in. Stereo line out.  |
|                          | Other*                      | Keyboard and PS/2 mouse port.   |
|                          | <b>Software</b>             | Operating Systems   |
|                          | BIOS                        | General Software's Embedded BIOS with OEM Enhancements. Field reprogrammable. Support for USB keyboard/mouse and USB boot.                    |

\*TVS protected port (Enhanced ESD protection).

‡ Power pins on this port are protected with a self-resetting fuse.

Data represents standard operation at 25°C with 5.0V supply unless otherwise noted. Specifications are subject to change without notice. PC/104 is a trademark of the PC/104 Consortium.