IGUANA

EPIC Single Board Computer

- Intel® Atom™ processor
  - D425 (single core) or
  - D525 (dual core)
- Industrial temp. versions
- Shock & vibe per MIL-STD-202G
- Fanless versions
- High-performance video
- Gigabit Ethernet (2 ports)
- DDR3 RAM (up to 4 GB)
- USB 2.0 (6 ports)
- Serial I/O (4 ports)
- SATA (2 ports)
- Analog input (4 chan.)
- Analog output (4 chan.)
- Digital I/O (16 lines)
- PCIe Mini Card socket
- CompactFlash socket

Overview

The Iguana is a low-power / high-performance single board computer (SBC) with extensive on-board I/O. Driven by an Intel Atom D525 or D425 processor, the Iguana provides 1.8 GHz performance with dual- and single-core options. Based on the industry-standard EPIC form factor (4.5 x 6.5 inches), this SBC is an excellent solution for embedded applications with substantial I/O requirements.

As with all VersaLogic products, the Iguana 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 Iguana provides a durable embedded computer solution with an excellent cost of ownership. The Iguana is manufactured to IPC-A-610 Class 2 standards and is fully RoHS compliant.

Details

Driven by an Intel Atom D525 (dual core) or D425 (single core) processor, the Iguana provides 1.8 GHz performance with low power consumption (9–13W typical). Enhanced low-power states allow designers to further minimize overall power consumption.

The integrated Intel GMA 3150 graphics core supports DirectX 9c, OpenGL 1.5, MPEG-2 decoding, and adaptive interlacing. A single-channel LVDS flat panel interface and an analog VGA video interface support Extended Desktop, Clone, and Twin display modes. An optional adapter converts LVDS output to VGA for dual VGA operation.

Basic on-board features include dual Gigabit Ethernet with network boot capability, up to 4 GB DDR3 RAM, six USB host ports, four serial ports, SATA interface with support for two devices, and HD audio. Removable flash storage is provided via CompactFlash socket, eUSB interface, and a PCI Express Mini Card socket with mSATA support.

On-board data acquisition features include eight analog inputs, four analog outputs, sixteen digital I/O lines, and two general purpose timers. An industry-standard PC/104-Plus expansion site provides plug-in access to off-the-shelf expansion modules from numerous vendors. The PCI Express Mini Card socket accommodates plug-in Wi-Fi modems, GPS receivers, MIL-STD-1553, solid-state storage, and other plug-in devices. The SPX expansion interface provides low-cost plug-in expansion for additional analog, digital, and CANbus I/O.

Available in both standard (0° to +60°C) and full industrial temperature (-40° to +85°C) versions, the rugged Iguana board meets MIL-STD-202G specifications for mechanical shock and vibration. Optional latching Ethernet connectors provide additional ruggedization for use in extremely harsh environments. Transient voltage suppression (TVS) devices on critical I/O ports provide enhanced electrostatic discharge (ESD) protection for the system.

The Iguana features an American Megatrends (AMI) UEFI BIOS with OEM enhancements. The field-reprogrammable BIOS supports custom defaults, USB booting, and other application functions. Iguana is compatible with a variety of popular x86 operating systems including Windows, Windows Embedded, Linux, VxWorks, and QNX.

Highlights

EPIC™ Form Factor
Industry-standard format with PC/104-Plus expansion.

Intel Atom D525 or D425 Processor
1.8 GHz performance. Single or dual core options. Low power consumption.

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

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

High-performance Video
Graphics core supports DirectX 9c, OpenGL 1.5, and MPEG-2 decoding. Analog and LVDS flat panel outputs.

Network
Dual GbE with remote boot support.

Analog + Digital I/O
On-board data acquisition. Eight analog inputs, four analog outputs, sixteen digital I/O lines, two timers.

RAM
Up to 4 GB DDR3 RAM.

USB
Six USB ports support keyboard, mouse, and other devices.

SATA
Supports bootable SATA hard drive and mSATA flash storage options.

PCle Mini Card Socket
Supports Wi-Fi modems, GPS receivers, MIL-STD-1553, solid-state storage, and other plug-in devices.

Flash Memory
CompactFlash socket, eUSB interface, and PCle Mini Card socket with mSATA support for plug-in flash storage.

Device I/O
Four serial ports and HD audio.

SPX Expansion
Add low cost analog, digital, and CANbus modules.
Specifications

General

<table>
<thead>
<tr>
<th>Model</th>
<th>Processor</th>
<th>Cores</th>
<th>Speed</th>
<th>Operating Temp</th>
<th>Cooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>VL-EPIC-25A</td>
<td>Atom D425</td>
<td>Single</td>
<td>1.8 GHz</td>
<td>0° to +60°C</td>
<td>Heatsink</td>
</tr>
<tr>
<td>VL-EPIC-25B</td>
<td>Atom D525</td>
<td>Dual</td>
<td>1.8 GHz</td>
<td>0° to +60°C</td>
<td>Heatsink</td>
</tr>
<tr>
<td>VL-EPIC-25C</td>
<td>Atom D525</td>
<td>Dual</td>
<td>1.8 GHz</td>
<td>-40° to +85°C</td>
<td>Fan</td>
</tr>
</tbody>
</table>

Power Requirements (+5V)†

<table>
<thead>
<tr>
<th>Model</th>
<th>Idle</th>
<th>Typical</th>
<th>Max.</th>
<th>S3</th>
</tr>
</thead>
<tbody>
<tr>
<td>VL-EPIC-25SA</td>
<td>8.4W</td>
<td>9.1W</td>
<td>9.7W</td>
<td>0.6W</td>
</tr>
<tr>
<td>VL-EPIC-25SB</td>
<td>10.4W</td>
<td>11.7W</td>
<td>12.9W</td>
<td>0.6W</td>
</tr>
<tr>
<td>VL-EPIC-25CA</td>
<td>9.4W</td>
<td>10.1W</td>
<td>10.7W</td>
<td>0.6W</td>
</tr>
<tr>
<td>VL-EPIC-25DA</td>
<td>11.4W</td>
<td>12.7W</td>
<td>13.9W</td>
<td>0.6W</td>
</tr>
</tbody>
</table>

System Setup & Hardware Monitors

- Major voltage rails monitored
- Watchdog timer with programmable timeout
- CPU temperature and fan speed monitoring
- Push-button reset and power

Stackable Bus

- PCI/104-Plus: PCI, ISA

Manufacturing Standards

- IPC-A-610 Class 2 compliant

RoHS

- RoHS (2002/95/CE) compliant

Environmental

Operating Temperature

- See Ordering Information

Storage Temperature

- -40° to +85°C

Cooling

- See Ordering Information

Airflow Requirements

- None (free air within operating temperature range)

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

- Single SO-DIMM socket
- Up to 4 GB DDR3 SDRAM
- 800 MT/s (400 MHz clock)

Video

- Integrated high-performance video
- Intel GMA 3150 graphics core
- DirectX 9c, OpenGL 1.5, MPEG-2 decode, and adaptive interfacing
- Analog and LVDS flat panel video interfaces
- Stereo Desktop, Clone, and Twin display modes
- Optional video adapter card

VRAM

- Up to 224 MB shared DRAM

Network Interface

- Ethernet‡
- Two fast Ethernet, 10/100Base-TX, and 100Base-FX ports
- On-board status LEDs and external LED header
- IEEE 1588 Precision Time Protocol (PTP) compatible
- RJ45 connectors
- Special Order: Latching headers

Mass Storage

- Rotating Drive
- Two SATA (Revision 2.0) ports
- Latching SATA connectors

Flash/SSD

- eUSB (USB signaling)
- CompactFlash (IDE signaling)
- mSATA (SATA signaling)

Network Boot Option

- Standard analog output (VGA)
- 24-bit. Up to 2048 x 1536 (60 Hz)
- Single-channel LVDS interface
- 18-bit. Up to 1366 x 768 (60 Hz)
- CMOS-selectable TFT panel types

Device I/O

- USB‡
- Six host USB 2.0 ports

COM 1/2/3/4 Interface‡

- RS-232/422/485 selectable. 16C550 compatible. 480 Kbps

Analog Input

- Eight channels. 12-bit. Single-ended. 100 Kbps. Per-channel input ranges of 0 to +5V, ±5V, 0 to +10V, and ±10V

Analog Output

- Four channels. 12-bit. Single-ended. 100 Kbps. 0 to ±409.6V

Digital I/O

- Sixteen TTL I/O lines
- Independent configurability

Audio

- Intel High-Definition Audio (HDA)
- Counter/Timers
- Standard
- Two general-purpose 16-bit timers
- Custom
- Three 8254 Programmable Interval Timers

Other I/O

- PCIe Mini Card Socket
- Supports WiFi modems, GPS receivers, non-volatile flash data storage with auto-detected mSATA support, and other plug-in modules

VersaLogic SPX Interface

- Add low cost analog, digital, and CANbus modules

Software

- BIOS
- American Megatrends (AMI) UEFI BIOS with OEM enhancements
- Field reprogrammable
- Support for USB keyboard/mouse and USB boot
- User-configurable CMOS defaults
- 13.9W

Sleep Mode

- ACPI 3.0. Support for S0, S3, and S4 suspend states and C1 processor state

Operating Systems

- Compatible with most x86 operating systems including Windows, Windows Embedded, Linux, VxWorks, and QNX

Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VL-CR-IGUA</td>
<td>Development cable kit</td>
</tr>
<tr>
<td>VL-CBR-5013</td>
<td>System I/O paddleboard</td>
</tr>
<tr>
<td>VL-CBR-4004</td>
<td>Paddleboards for analog and digital I/O</td>
</tr>
<tr>
<td>VL-CBR-2202</td>
<td>ATX power adapter cable</td>
</tr>
<tr>
<td>VL-CBR-1201</td>
<td>12-pin 2 mm (latching) / 15-pin VGA adapter</td>
</tr>
<tr>
<td>VL-CBR-0702</td>
<td>19.75&quot; SATA cable (latching)</td>
</tr>
<tr>
<td>VL-CBR-0401</td>
<td>6.25&quot; ATX to SATA power adapter</td>
</tr>
<tr>
<td>VL-HDW-105</td>
<td>0.6&quot; standoff package (metric thread)</td>
</tr>
<tr>
<td>VL-CBR-0701</td>
<td>19.75&quot; SATA cable</td>
</tr>
<tr>
<td>VL-CBR-0804</td>
<td>12&quot; Ethernet adapter (latching)</td>
</tr>
<tr>
<td>VL-CBR-1401</td>
<td>Cable assembly for (2) SPX modules</td>
</tr>
<tr>
<td>VL-CBR-1402</td>
<td>Cable assembly for (4) SPX modules</td>
</tr>
<tr>
<td>VL-CBR-2010</td>
<td>20&quot; 18-bit LVDS flat panel (Hirose)</td>
</tr>
<tr>
<td>VL-CBR-2011</td>
<td>20&quot; 18-bit LVDS flat panel (JAE)</td>
</tr>
<tr>
<td>VL-CBR-2014</td>
<td>LVDS to VGA adapter board</td>
</tr>
<tr>
<td>VL-MM-xxxx</td>
<td>DDR3 SDRAM module</td>
</tr>
<tr>
<td>VL-CF-xxxx</td>
<td>CompactFlash module (IDE)</td>
</tr>
<tr>
<td>VL-FI-xxxx</td>
<td>eUSB module (USB)</td>
</tr>
<tr>
<td>VL-FZ-xxxx</td>
<td>mSATA module (SATA)</td>
</tr>
<tr>
<td>VL-SPX-x</td>
<td>SPX expansion module</td>
</tr>
<tr>
<td>VL-ENL-5x</td>
<td>Development enclosure</td>
</tr>
<tr>
<td>VL-PS200-ATX</td>
<td>200W ATX-style development power supply</td>
</tr>
<tr>
<td>VL-HDW-106</td>
<td>0.6&quot; standoff package (English thread)</td>
</tr>
<tr>
<td>VL-HDW-107</td>
<td>PCIe Mini Card / mSATA hardware kit (metric thread)</td>
</tr>
<tr>
<td>VL-HDW-109</td>
<td>eUSB hardware kit</td>
</tr>
<tr>
<td>VL-CF-CLIP1</td>
<td>CompactFlash retention clip</td>
</tr>
<tr>
<td>VL-HDW-201</td>
<td>PC/104™ board extraction tool</td>
</tr>
</tbody>
</table>

† Power specifications represent operation at +25°C with +5V supply running Windows XP with 2 GB RAM, LVS display, SATA, GBE, and USB keyboard/mouse. Typical power computed as the mean value of the lower and maximum power specifications. Maximum power is measured with 95% CPU utilization.
‡ TVS protected port (enhanced ESD protection)
§ Power pins on this port are overload protected

Specifications are subject to change without notification. Intel and Atom are trademarks of Intel Corp. EPIC and PC/104-Plus are trademarks of the PC/104 Consortium. PCI Express is a registered trademark of PCI-SIG. SATA and mSATA are trademarks of the Serial ATA International Organization. SPX is a trademark of VersaLogic Corp. All other trademarks are the property of their respective owners.