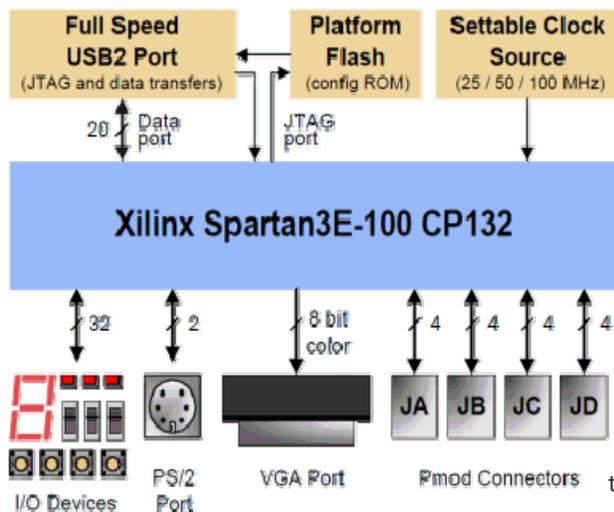# Athena - Spartan-3E FPGA Board

The Athena FPGA board is a circuit design and implementation platform that anyone can use to gain experience building real digital circuits. Built around a Xilinx Spartan-3E Field Programmable Gate Array and a Atmel AT90USB2 USB controller, the Athena FPGA board provides complete, ready-to-use hardware suitable for hosting circuits ranging from basic logic devices to complex controllers. A large collection of on-board I/O devices and all required FPGA support circuits are included, so countless designs can be created without the need for any other components.

Four standard expansion connectors allow designs to grow beyond the Athena FPGA board using breadboards, user-designed circuit boards, or peripheral modules (Peripheral modules are inexpensive analog and digital I/O modules that offer A/D & D/A conversion, motor drivers, sensor inputs, and many other features). Signals on the 6-pin connectors are protected against ESD damage and short-circuits, ensuring a long operating life in any environment. The Athena board works seamlessly with all versions of the Xilinx ISE tools, including the free WebPack. It ships with a USB cable that provides power and a programming interface, so no other power supplies or programming cables are required.

Specifications:

- Xilinx Spartan 3-E FPGA, 100K gate

- FPGA features 18-bit multipliers, 72Kbits of fast dual-port block RAM, and 500MHz+ operation

- USB 2 full-speed port for FPGA configuration and data transfers (using Adept 2.0 software available as a free download)

- XCF02 Platform Flash ROM that stores FPGA configurations indefinitely

- User-settable oscillator frequency (25, 50, and 100 MHz), plus socket for a second oscillator

- Three on-board voltage regulators (1.2V, 2.5V, and 3.3V) that allow use of 3.5V-5.5V external supplies

- 8 LEDs, 4-digit seven-segment display, four pushbuttons, 8 slide switches, PS/2 port, and a 8-bit VGA port

- Four 6-pin headers for user I/Os, and attaching Ceda-labz PMOD accessory circuit boards

- JTAG programming via on-board USB2 port using the Adept Software (Requires Adept 2.0 or later for operation)

Board Features:

- XCF04S Xilinx Platform Flash ROM to store FPGA configurations
- Large collection of I/Os including eight LEDs and four slide switches
- LCD and 7 segment displays
- RS 232 and VGA ports
- Ethernet port with physical layer controller
- User-selectable oscillator , plus a socket for a second oscillator
- 100 pin user I/O and peripheral module connection

FPGA Features:

- 100k gates.
- 108 I/Os.
- 72k Block RAM.
- 15k Distributed RAM.
- 240 CLBs.

Applications:

Athena FPGA board can be used to practice or prototype countless designs without having to procure new components each time. Reusability makes it a valuable resource in the VLSI learning process.