Stackable Development Boards for Spartan-II, Virtex, and Virtex-E FPGAs

A new series of prototyping boards to help you quickly test and implement your FPGA designs.

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To help you increase your productivity and decrease your time to market, we recently designed a new set of development boards, using Spartan-II, Virtex, and Virtex-E FPGAs. Like our original Virtex-based board, the new boards provide all the necessary basic components needed in most of FPGA-based designs. In addition, we incorporated an optional large ZBT RAM to satisfy the needs of modern telecommunication and imaging applications. All I/Os are routed to header connectors where you connect your special purpose interfaces. By stacking several boards you can easily cope with complex designs that exceed the scope of a single FPGA. The boards are fully compatible with their predecessor such that

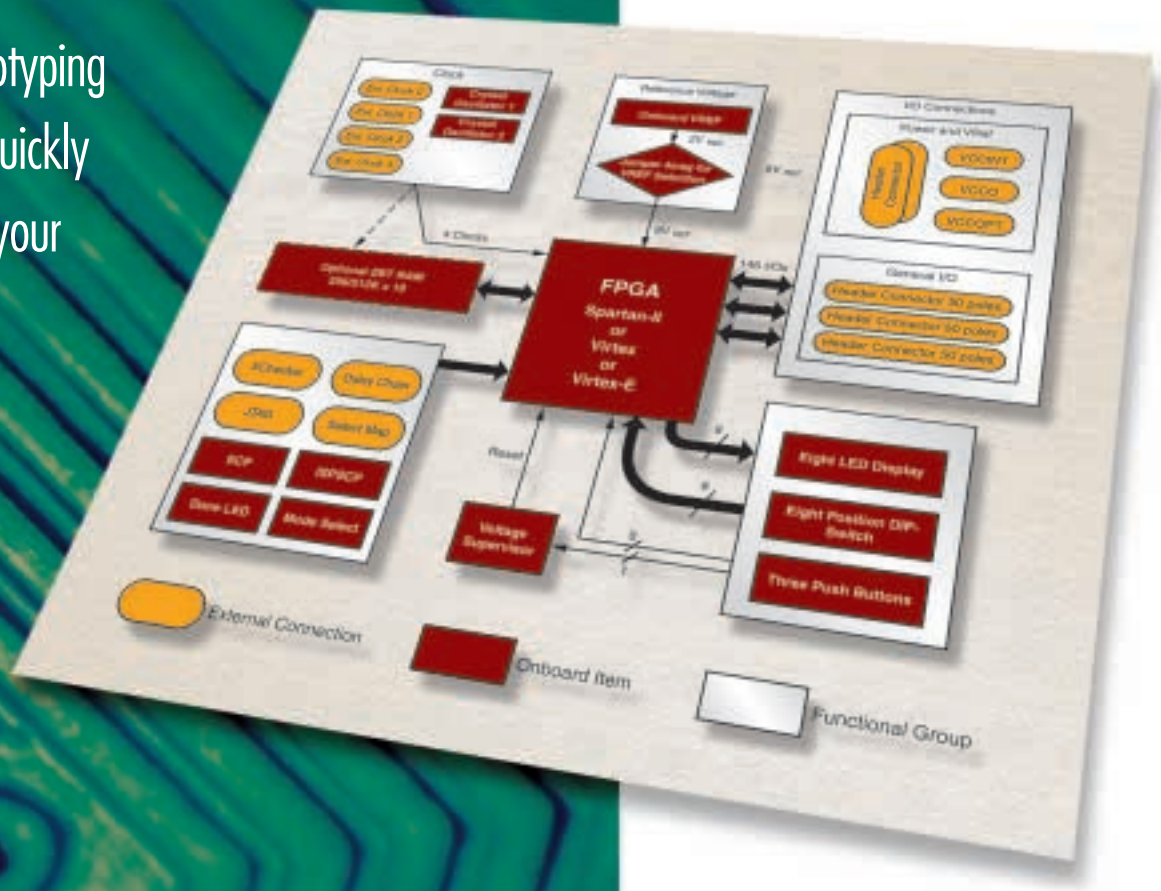

Figure 1 - Functional diagram of the development board modules

you can stack them together and reuse our power module (PWR3) as the supply for the various required supply and reference voltages.

Key Features

Each development board uses either a Spartan-II, Virtex, or Virtex-E FPGA in a PQ-208 package (Spartan-II) or an HQ-240 package (Virtex, Virtex-E). Vital components for a basic system are placed around the FPGA, including two crystal oscillators, three push buttons, eight DIP switches, and nine status LEDs. An optional ZBT RAM helps to support any memory demanding applications.

All configuration modes of the FPGA are supported, and you can provide configuration data either by using serial configuration PROMs (SCPs) sitting in onboard sockets, in-system programmable (ISP) PROMs, or by connecting a Xilinx MultiLINX, XChecker, or JTAG cable. The ISP PROMs and the FPGA form a single JTAG chain. A functional diagram detailing the building blocks of the prototyping boards is shown in Figure 1.

The crystal oscillators are housed in standard DIL-8 or DIL-14 size metal cans plugged into sockets, so you can easily change the frequency. To facilitate the distribution of very fast clocks, we mounted four SMB coaxial connectors, next to the clock pins of the FPGA, which may be terminated with optional resistors to ground. The synchronous clock input of the ZBT RAM is also connected to one of these connectors. Alternatively you can use an FPGA-generated clock driven on an I/O pin.

Push buttons, DIP switches, and LEDs form a user interface that allows you to provide configuration data and monitor display status information from the running system.

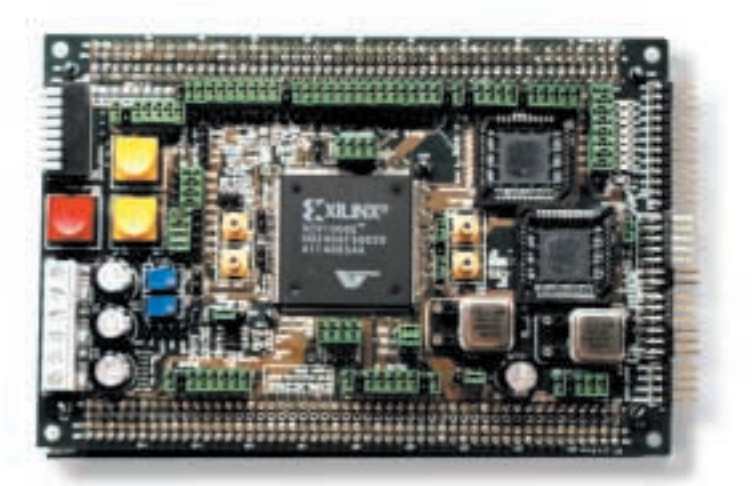

Figure 2 - Top view of the development board module

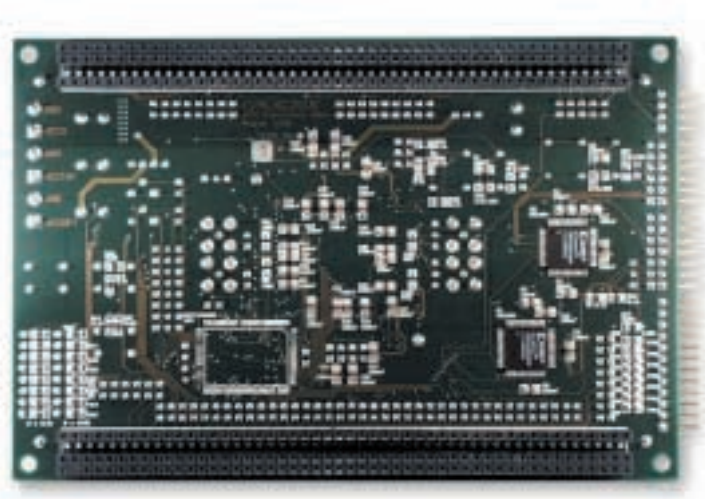

Figure 3 - Bottom view of the development board module

You can configure all eight I/O banks independently of each other, and you can select their VCCO and reference voltages individually with jumpers. Two different reference voltages (derived from the FPGA core voltage) can be generated onboard by means of trim potentiometers. Up to eight reference voltages can be connected from an external source, such as our PWR3 power module.

Figures 2 and 3 show the top and bottom view of a development board module equipped with an XCV1000E FPGA.

Applications

The board is very well suited to:

- Evaluate the larger members of the Spartan-II, Virtex, and Virtex-E FPGA families in the PQ-208 or HQ-240 packages, respectively.
- Experiment with different low voltage I/O standards.
- Implement custom designs using the full power of the Virtex architecture.
- Test algorithms under real-time conditions and watch the signals with a logic analyzer.
- Quickly and easily expand the complexity of the system by stacking several boards.

Conclusion

The EVALXC2S, EVALXCV, and EVALXCVE development board series gives you an ideal platform for evaluating, implementing, testing, and extending custom designs using Spartan-II, Virtex, or Virtex-E devices. Using the optional ZBT RAM you can even implement applications calling for large amounts of memory. You can also easily integrate the board into a larger system. Like their predecessor, the boards can be combined with the PWR3 power module to form a compact unit that runs from a single power supply. This makes it ideal for teaching, seminars, and courses.

For additional information on EVALXC2S/XCV/XCVE see: www.erst.ch, or contact us at info@erst.ch.