



# ProASIC<sup>®</sup>3 Starter Kit



**ProASIC<sup>®</sup>3**    **ProASIC<sup>®</sup>3E**

## THE ALL-INCLUSIVE, LOW COST

## EVALUATION KIT FOR THE ProASIC3 FAMILY

The ProASIC3 Starter Kit is a complete solution that enables quick evaluation of Actel ProASIC3 and ProASIC3E devices and design prototyping. ProASIC3/E devices are Actel third-generation Flash devices in a seven-layer metal, Flash-based CMOS technology. Combining the advantages of ASIC devices with the benefits of programmable devices through nonvolatile Flash technology, ProASIC3/E devices are the only FPGA with on-chip user nonvolatile Flash memory (NVM). ProASIC3/E devices are reprogrammable and offer time to market benefits at an ASIC-level unit cost. These features enable engineers to create high-performance, high-density systems using existing FPGA design flows and tools. In addition, the ProASIC3/E devices offer six clock conditioning circuits with up to six on-board

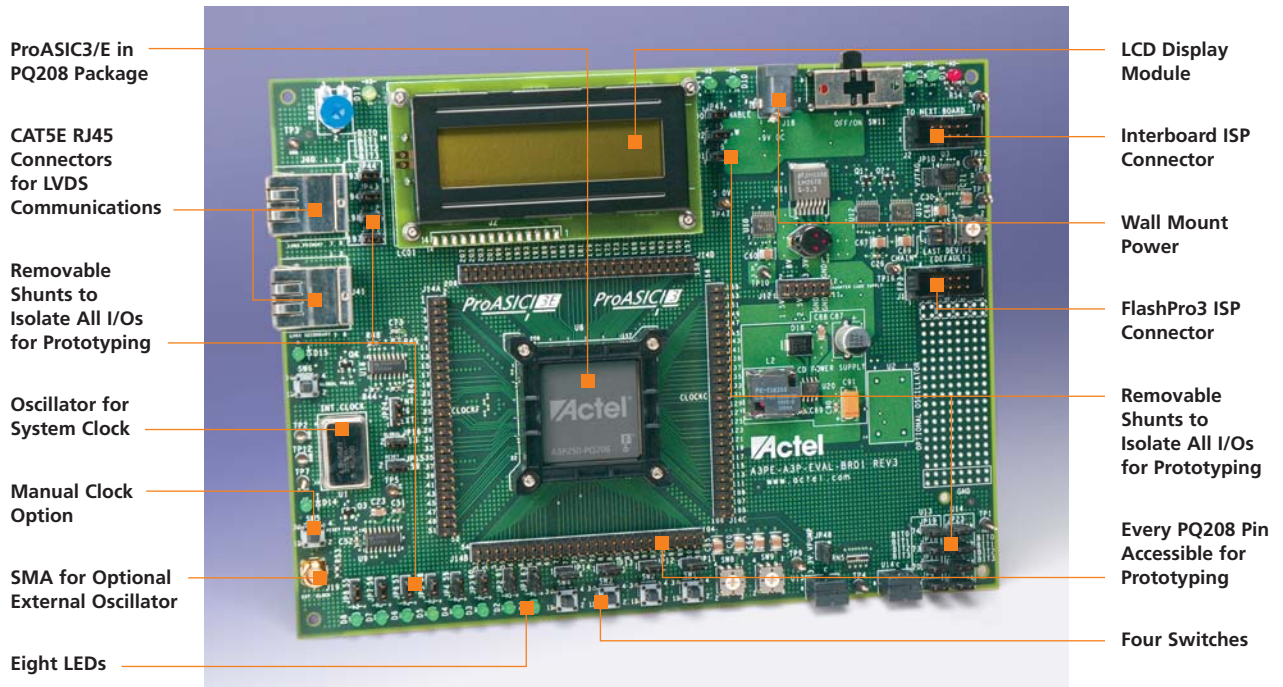
phase-locked loops (PLLs). ProASIC3/E devices also have up to 504 kbits of true dual-port SRAM and provide typical system performance in excess of 150 MHz. Flash-based ProASIC3/E devices are live at power-up. As soon as system power is applied and within normal operating specifications, ProASIC3/E devices are working. ProASIC3/E devices have a 128-bit Flash-based lock and industry-leading AES decryption used to secure programmed intellectual property (IP) and configuration data. The AES-128-block cipher is a faster, more secure, government-approved replacement for 3DES. ProASIC3/E devices have a built-in decryption engine and a Flash-based Pass Key that make ProASIC3/E devices the most comprehensive programmable logic device security solution available today.

### All-Inclusive and Low Cost

The low cost ProASIC3 Starter Kit contains everything you need to start using the advanced features of the Actel ProASIC3 family.

The ProASIC3 Starter Kit includes the following:

- Evaluation Board with an A3P250-PQ208 or an A3PE600-PQ208 Device
- Actel Libero® Integrated Design Environment (IDE) Gold
- FlashPro3 and Programming Cable
- Power Supply
- User's Guide Including Printed Circuit Board (PCB) Schematics
- Sample Design



### ProASIC3 Evaluation Board

The ProASIC3 evaluation board has on-board voltage regulation, enabling you to independently set the I/O voltages ( $V_{CC1}$ ) to 1.5 V, 1.8 V, 2.5 V, or 3.3 V on each of two I/O banks for ProASIC3E devices (one bank for ProASIC3). For ProASIC3 devices, two of the remaining three I/O banks are fixed at 3.3 V, and the remaining I/O bank is fixed at 2.5 V. For ProASIC3E devices, four of the remaining six I/O banks are fixed at 3.3 V, and the other two are fixed at 2.5 V. You can generate the system clock using the on-board oscillator and ProASIC3/E PLLs. Eight LEDs and four



switches provide simple inputs and outputs to the system. Advanced FlashROM capabilities of ProASIC3/E, such as serialization, are demonstrated using the LCD display module included on the board. Prototyping headers connect to all the ProASIC3/E device I/Os for the PQ208 package, enabling you to easily add components to the evaluation board. The board is equipped with a small prototyping area to allow the addition of components to enable design experimentation. Two CAT5E RJ45 connectors are provided for demonstrating the high-speed LVDS communications capability of the ProASIC3/E devices. Finally, the board is equipped with programming headers to support ISP of single and JTAG-chained boards using FlashPro3.



### FlashPro3

FlashPro3 is a portable, low cost, USB 2.0, in-system programmer for Actel ProASIC3/E devices. This programmer draws power from the USB connection rather than an external power brick to create an extremely compact solution. The FlashPro3 ultra-small form factor, low cost, and easy to use software make in-system programming with ProASIC3/E devices a simple task.

### Libero IDE Gold

The Actel Libero Integrated Design Environment (IDE) is the most comprehensive and powerful FPGA design and development software available. Libero IDE consists of a powerful suite of FPGA development tools providing designers with an efficient and comprehensive start-to-finish methodology, from schematic/HDL entry to place-and-route and programming. Libero IDE Gold supports Actel devices containing up to 1 million gates. Actel Libero IDE offers the latest and best-in-class tools from leading EDA vendors such as Mentor Graphics®, SynaptiCAD™, Synplicity®, and Magma® Design Automation.



All of these tools are combined into a single package, giving you all the tools you need to evaluate the advanced features of ProASIC3/E devices, including AES security, user device serialization in the FlashROM, and high-speed programming. You can also start prototyping your own Flash designs of up to 600 k system gates with the A3PE600-based ProASIC3 Starter Kit.



### Programming Cable

FlashPro3 uses a standard 10-strand ribbon cable terminated in standard JTAG dual row 100-mil in-line sockets; such cables are available from a variety of manufacturers. It is small enough to keep the entire programmer portable and can be easily replaced.

### User's Guides

If you have not used Actel ProASIC3/E devices or Actel Libero IDE software, the comprehensive user's guide contained in the ProASIC3 Starter Kit will take you through the entire design process step by step, using ProASIC3/E devices. The tutorial uses a simple design as an example and takes you from creating a new project, all the way to programming the device and demonstrating different aspects of FlashROM security features and serialization in about two hours.

### Schematics

The ProASIC3 evaluation board schematic and gerbers are also included in the kit. Use the schematics and gerbers as a guideline for your own board, or easily modify it for your own design.

### Two Versions of the Starter Kit

The ProASIC3 Starter Kit comes in two versions with slightly different boards. Each version comes with a choice of two different parts, giving four variations altogether. The first "PROTO" version is intended for prototyping and contains a board that has a socket with either a ProASIC3 or a ProASIC3E device fitted in it. The fitted device can be replaced by other PQ208 packaged devices in the ProASIC3 or ProASIC3E families, as well as ARM7™-ready ProASIC3/E devices. The second "EVAL" version is lower cost, intended for simple evaluation. It contains either a ProASIC3 or a ProASIC3E device directly soldered to the board. Four LVDS channels are supported on boards fitted with a ProASIC3E device and two LVDS channels are supported on boards fitted with a ProASIC3 device. This variation occurs because the boards have been wired specifically to demonstrate LVDS with ProASIC3E devices.

For more information regarding the **Actel ProASIC3 Starter Kit**, please contact your local **Actel** sales representative.



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