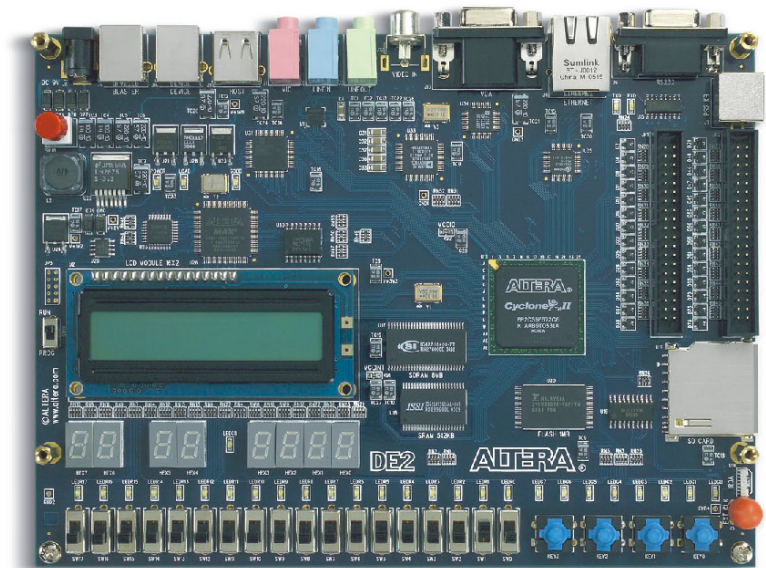


Thank you for using the Altera DE2 Development and Education board.

The purpose of this board is to provide the ideal vehicle for learning about digital logic, computer organization, and FPGAs. It uses the state-of-the-art technology in both hardware and CAD tools to expose students and professionals to a wide range of topics. The board offers a rich set of features that make it suitable for use in a laboratory environment for university and college courses, for a variety of design projects, as well as for the development of sophisticated digital systems. Altera provides a suite of supporting materials for the DE2 board, including tutorials, “ready-to-teach” laboratory exercises, and illustrative demonstrations.

DE2 Board Features

The DE2 board features a state-of-the-art Cyclone® II 2C35 FPGA in a 672-pin package. All important components on the board are connected to pins of this chip, allowing the user to control all aspects of the board’s operation. For simple experiments, the DE2 board includes a sufficient number of robust switches (of both toggle and push-button type), LEDs, and 7-segment displays. For more advanced experiments, there are SRAM, SDRAM, and Flash memory chips, as well as a 16 x 2 character display. For experiments that require a processor and simple I/O interfaces, it is easy to instantiate Altera’s Nios II processor and use interface standards such as RS-232 and PS/2. For experiments that involve sound or video signals, there are standard connectors for microphone, line-in, line-out (24-bit audio CODEC), video-in (TV Decoder), and VGA (10-bit DAC); these features can be used to create CD-quality audio applications and professional-looking video. For larger design projects the DE2 provides USB 2.0 connectivity (both host and device), 10/100 Ethernet, an infrared (IrDA) port, and an SD memory card connector. Finally, it is possible to connect other user defined boards to the DE2 board by means of two expansion headers.



Supporting Material

Software provided with the DE2 board features the Quartus® II Web Edition CAD system, and the Nios® II Embedded Processor. Also included are several aids to help students and professionals experiment with features of the board, such as tutorials and example applications.

Traditionally, manufacturers of educational FPGA boards have provided a variety of hardware features and software CAD tools needed to implement designs on these boards, but very little material has been offered that could be used directly for teaching purposes. Altera's DE2 board is a significant departure from this trend. In addition to the DE2 board's hardware and software, Altera Corporation provides a full set of associated *laboratory exercises* that can be performed in a laboratory setting for typical courses on logic design and computer organization. In effect, the DE2 board and the available exercises can be used as a ready-to-teach platform for both university and college courses.

