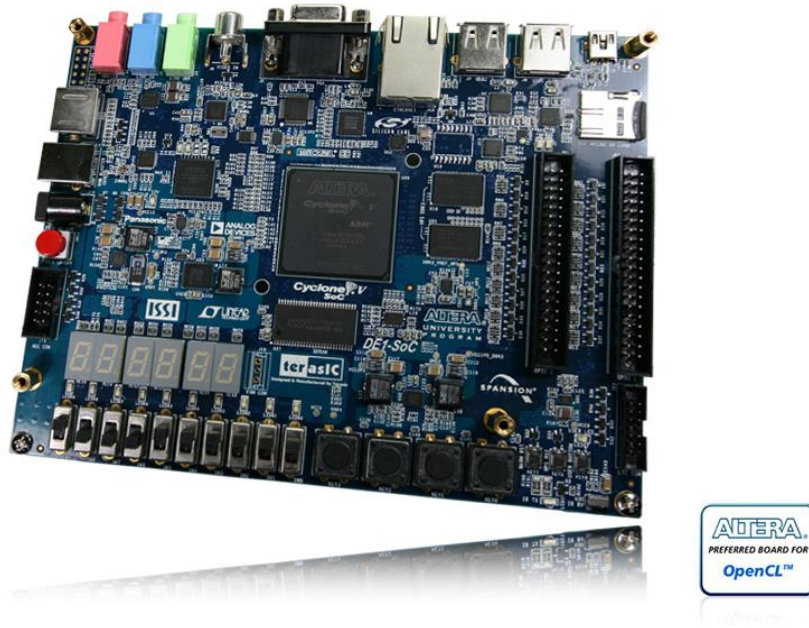


DE1-SoC Board

1. Overview



The DE1-SoC Development Kit presents a robust hardware design platform built around the Altera System-on-Chip (SoC) FPGA, which combines the latest dual-core Cortex-A9 embedded cores with industry-leading programmable logic for ultimate design flexibility. Users can now leverage the power of tremendous re-configurability paired with a high-performance, low-power processor system. Altera's SoC integrates an ARM-based hard processor system (HPS) consisting of processor, peripherals and memory interfaces tied seamlessly with the FPGA fabric using a high-bandwidth interconnect backbone. The DE1-SoC development board includes hardware such as high-speed DDR3 memory, video and audio capabilities, Ethernet networking, and much more.

The DE1-SOC Development Kit contains all components needed to use the board in conjunction with a computer that runs the Microsoft Windows XP or later (*64-bit OS and Quartus II 64-bit are required to compile projects for DE1-SoC*).

2. Specification

DE1-SoC Board

The DE1-SoC board has many features that allow users to implement a wide range of designed circuits, from simple circuits to various multimedia projects.

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The following hardware is provided on the board:

FPGA Device

- Cyclone V SoC 5CSEMA5F31C6 Device
- Dual-core ARM Cortex-A9 (HPS)
- 85K Programmable Logic Elements
- 4,450 Kbits embedded memory
- 6 Fractional PLLs
- 2 Hard Memory Controllers

Configuration and Debug

- Serial Configuration device – EPCS128 on FPGA
- On-Board USB Blaster II (Normal type B USB connector)

Memory Device

- 64MB (32Mx16) SDRAM on FPGA
- 1GB (2x256Mx16) DDR3 SDRAM on HPS
- Micro SD Card Socket on HPS

Communication

- Two Port USB 2.0 Host (ULPI interface with USB type A connector)
- USB to UART (micro USB type B connector)
- 10/100/1000 Ethernet
- PS/2 mouse/keyboard
- IR Emitter/Receiver

Connectors

- Two 40-pin Expansion Headers (voltage levels: 3.3V)
- One 10-pin ADC Input Header
- One LTC connector (One Serial Peripheral Interface (SPI) Master ,one I2C and one GPIO interface)

Display

- 24-bit VGA DAC

Audio

- 24-bit CODEC, Line-in, line-out, and microphone-in jacks
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Video Input

- TV Decoder (NTSC/PAL/SECAM) and TV-in connector

ADC

- sample rate: 500 KSPS
- Channel number: 8
- Resolution: 12 bits
- Analog input range : 0 ~ 4.096 V

Switches, Buttons and Indicators

- 4 User Keys (FPGA x4)
- 10 User switches (FPGA x10)
- 11 User LEDs (FPGA x10 ; HPS x 1)
- 2 HPS Reset Buttons (HPS_RST_n and HPS_WARM_RST_n)
- Six 7-segment displays

Sensors

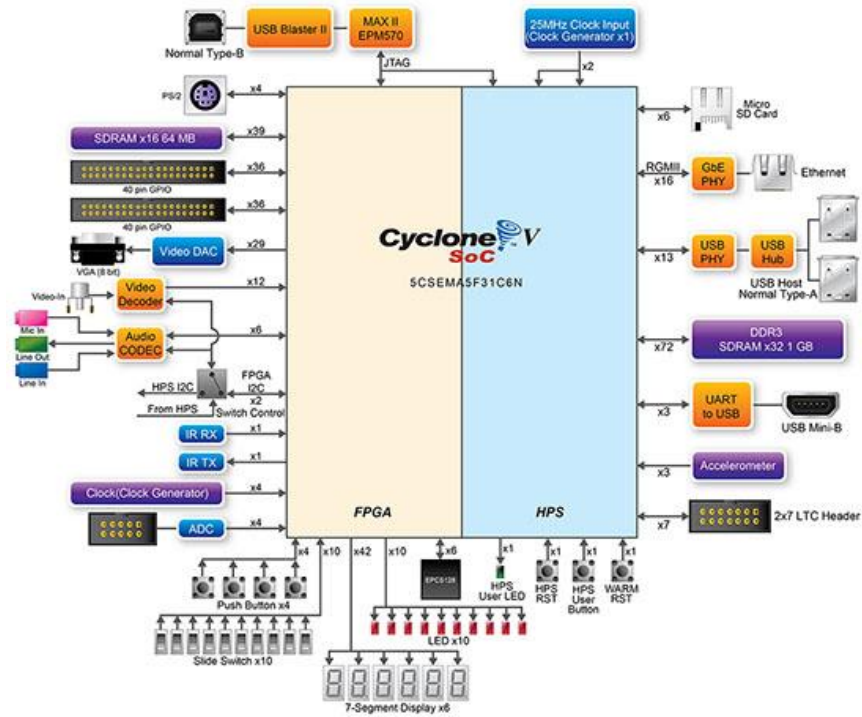
- G-Sensor on HPS

Power

- 12V DC input

Block Diagram of the DE1-SOC Board

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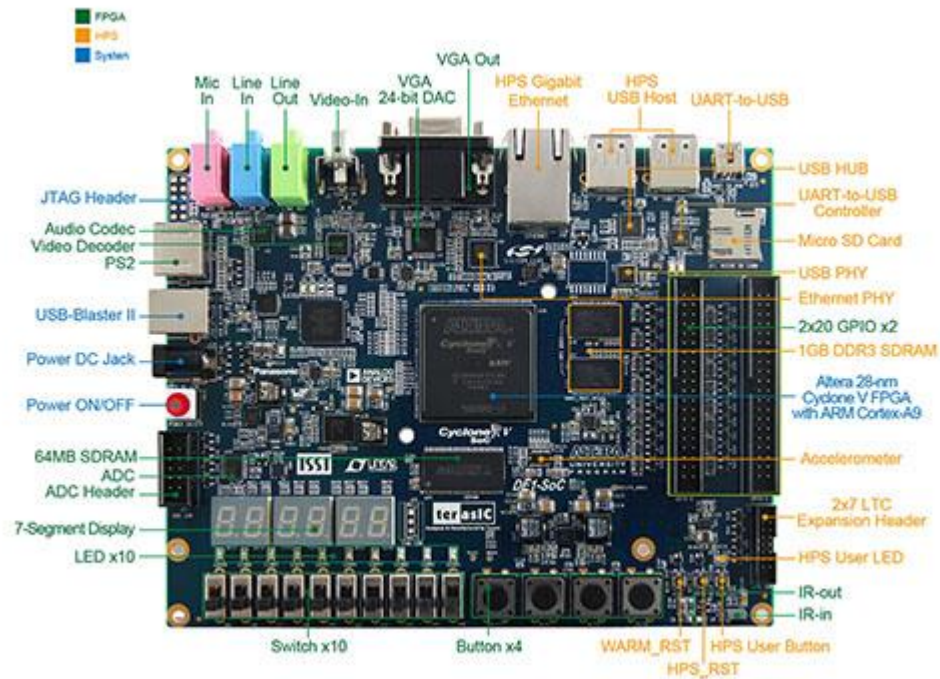
3. Kit content



- DE1-SoC Board
- DE1-SoC Quick Start Guide
- Type A to B USB Cable
- Type A to Mini-B USB Cable
- Power DC Adapter (12V)

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4. Layout



- Size : 166*130 mm
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