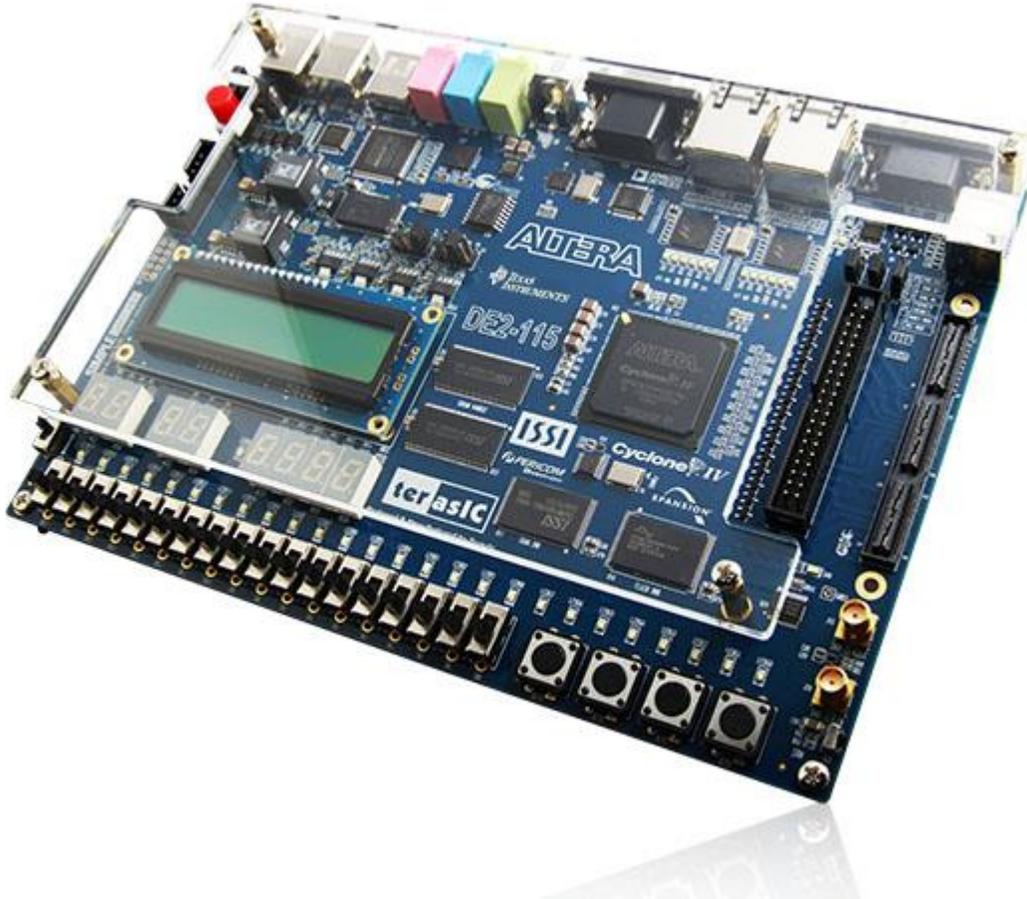


Altera DE2-115 Development and Education Board

1. Overview



The DE2 series has consistently been at the forefront of educational development boards by distinguishing itself with an abundance of interfaces to accommodate various application needs. Extending its leadership and success, Terasic announces the latest DE2-115 that features the Cyclone IV E device. Responding to increased versatile low-cost spectrum needs driven by the demand for mobile video, voice, data access, and the hunger for high-quality images, the new DE2-115 offers an optimal balance of low cost, low power and a rich supply of logic, memory and DSP capabilities.

The Cyclone EP4CE115 device equipped on the DE2-115 features 114,480 logic elements (LEs), the largest offered in the Cyclone IV E series, up to 3.9-Mbits of RAM, and 266 multipliers. In addition, it delivers an unprecedented combination of low cost and functionality, and lower power compared to previous generation Cyclone devices.

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The DE2-115 adopts similar features from the earlier DE2 series primarily the DE2-70, as well as additional interfaces to support mainstream protocols including Gigabit Ethernet (GbE). A High-Speed Mezzanine Card (HSMC) connector is provided to support additional functionality and connectivity via HSMC daughter cards and cables. For large-scale ASIC prototype development, a connection can be made with two or more FPGA-based boards by means of a HSMC cable through the HSMC connector.

2. Specification

The DE2-115 Board

Cyclone® IV EP4CE115

- 114,480 logic elements (LEs)
- 3,888 Embedded memory (Kbits)
- 266 Embedded 18 x 18 multipliers
- 4 General-purpose PLLs
- 528 User I/Os

Configuration Device and USB-Blaster Circuit

- EPCS64 serial configuration device
- On-board USB-Blaster circuitry
- JTAG and AS mode configuration supported

Memory Devices

- 128MB (32Mx32bit) SDRAM
- 2MB (1Mx16) SRAM
- 8MB (4Mx16) Flash with 8-bit mode
- 32Kbit EEPROM

Switches and Indicators

- 18 switches and 4 push-buttons
- 18 red and 9 green LEDs
- Eight 7-segment displays

Audio

- 24-bit encoder/decoder(CODEC)
- line-in, line-out, and microphone-in jacks

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Display

- 16x2 LCD module

On-Board Clocking Circuitry

- Three 50MHz oscillator clock inputs
- SMA connectors (external clock input/output)

SD Card Socket

- Provides SPI and 4-bit SD mode for SD Card access

Two Gigabit Ethernet Ports

- Integrated 10/100/1000 Gigabit Ethernet
- Supports Industrial Ethernet IP cores

172-pin High Speed Mezzanine Card (HSMC)

- Configurable I/O standards (voltage levels: 3.3/2.5/1.8/1.5V)

USB Type A and B

- Provide host and device controller compliant with USB 2.0
- Support data transfer at full-speed and low-speed
- PC driver available

40-pin Expansion Port

- Configurable I/O standards (voltage levels: 3.3/2.5/1.8/1.5V)

VGA-out Connector

- VGA DAC (high speed triple DACs)

DB-9 Serial Connector

- RS232 port with flow control

PS/2 Connector

- PS/2 connector for connecting a PS2 mouse or keyboard to the DE2-115

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Remote Control

- Infrared receiver module

TV-in Connector

- TV decoder (NTSC/PAL/SECAM)

Power

- Desktop DC input
- Switching and step-down regulators LM3150MH

Connectivity

➡ Connect D5M

- Connect D5M with DE2-115

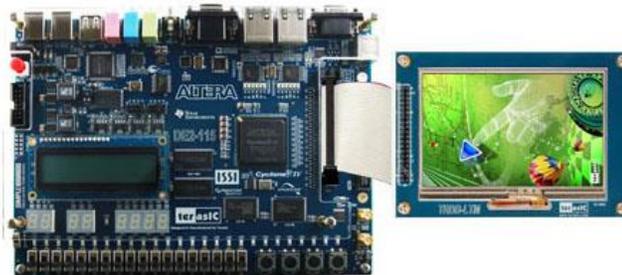


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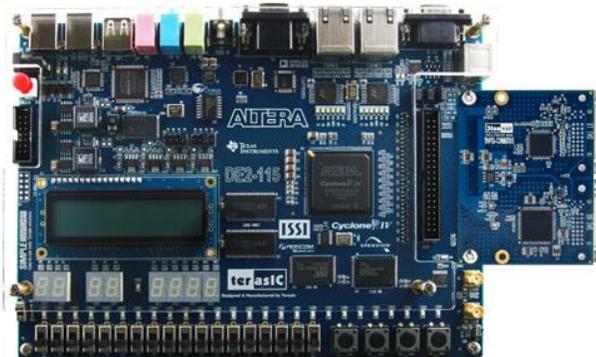
➔ Connect LTM

- Connect LTM with DE2-115



➔ Connect DVI-HSMC

- Connect DVI-HSMC with DE2-115



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➔ Connect ADA-HSMC

- Connect ADA-HSMC with DE2-115



➔ Connect DCC-HSMC

- Connect DCC-HSMC with DE2-115



➔ Connect HTG (M)

- Connect HTG(M) with DE2-115

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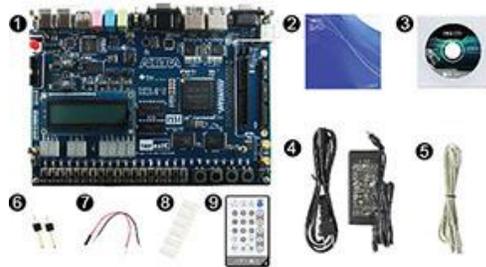


➡ Connect COMM

- Connect COMM with DE2-115



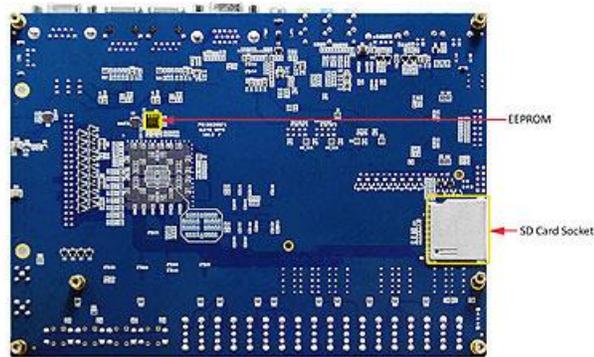
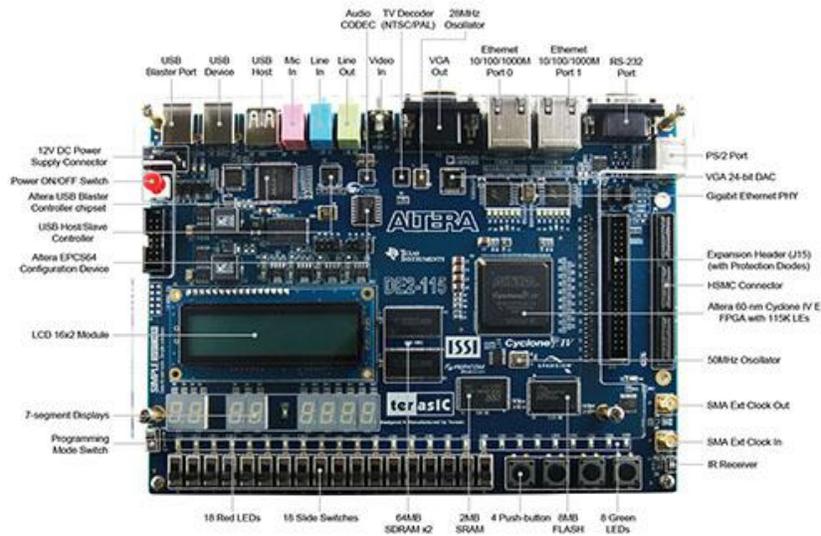
3. Kit content



- 1 Altera DE2-115 Board
- 2 Altera Complete Design Suite DVD for Windows
- 3 DE2-115 System CD
- 4 Power DC Adapter 12V/2A
- 5 USB Programming Cable
- 6 Two 1-pin Headers
- 7 Two Wire Strips (black and red)
- 8 Six Silicon Footstands
- 9 Remote Controller

4. Layout

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- Size : 210.8*156 mm

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