TE0300 Overview

The FPGA industrial micromodule integrates a leading edge Xilinx Spartan-3E FPGA, an USB 2.0 microcontroller, configuration Flash, DDR SDRAM and power supplies on a tiny footprint. A large number of configurable I/Os are provided via B2B mini-connectors.

The module is intended to be used as an OEM board, or to be combined with our carrier boards. It is a powerful system widely used for educational and research activities.

Boards with other configurations, larger FPGA's or equipped with industrial temperature grade parts are available on request.

Software for SPI flash programming over USB as well as reference designs for high speed data transfer over USB are included.

model	gates [M]	block-RAM [kbit]	clock [MHz]	DDR RAM [Mbit]	temp. range
TE0300-01M	1.2	504	125	512	comm.
TE0300-01BM	1.6	648	125	512	comm.
TE0300-01BMLP	1.6	648	100	512	comm.
TE0300-01NR	1.2	504	125	-	comm.
TE0300-01I	1.2	504	125	512	ind.
TE0300-01IBM	1.6	648	125	512	ind.
TE0300-01IBMLP	1.6	648	100	512	ind.

abbreviations:

- comm. = commercial grade temperature
- ind. = industrial grade temperature

TE0300 Series Selection Chart

Module Options

- **FPGA options**
  Module can be ordered with Xilinx Spartan-3E XC3S1200E or XC3S1600E chip.

- **Flash options**
  Module can be ordered with 32, 64 or 128 Mbit SPI Flash chip.
- **Temperature grade options**
  Module can be ordered in commercial or in extended (from -25 C° to +85 C°) temperature grade.

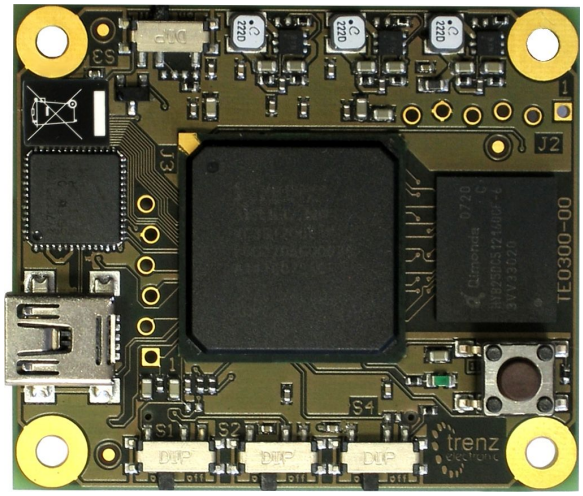
Sample Applications

- Cryptographic hardware module
- Digital signal processing
- Embedded educational platform
- Embedded industrial OEM platform
- Embedded system design
- Emulation platforms
- FPGA graphics
- Image processing
- IP (intellectual property) cores

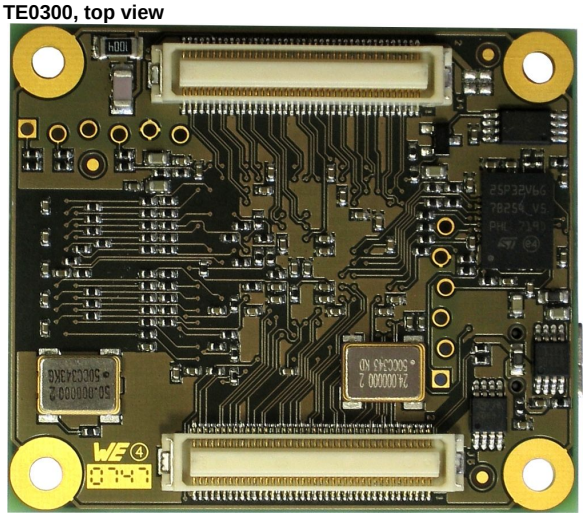
Key Features

- High-density plug-in **Xilinx Spartan-3E** module
- **USB 2.0** interface with high speed (480 Mbit/s) data rate
- Large **SPI flash** for configuration and user storage accessible via USB or SPI connector
- Large **DDR-SDRAM**
- FPGA configuration is implemented via **JTAG, SPI Flash or USB**

- Low-power design
- Parallel processing
- Rapid prototyping
- Reconfigurable computing
- System-on-Chip (SoC) development



TE0300, top view

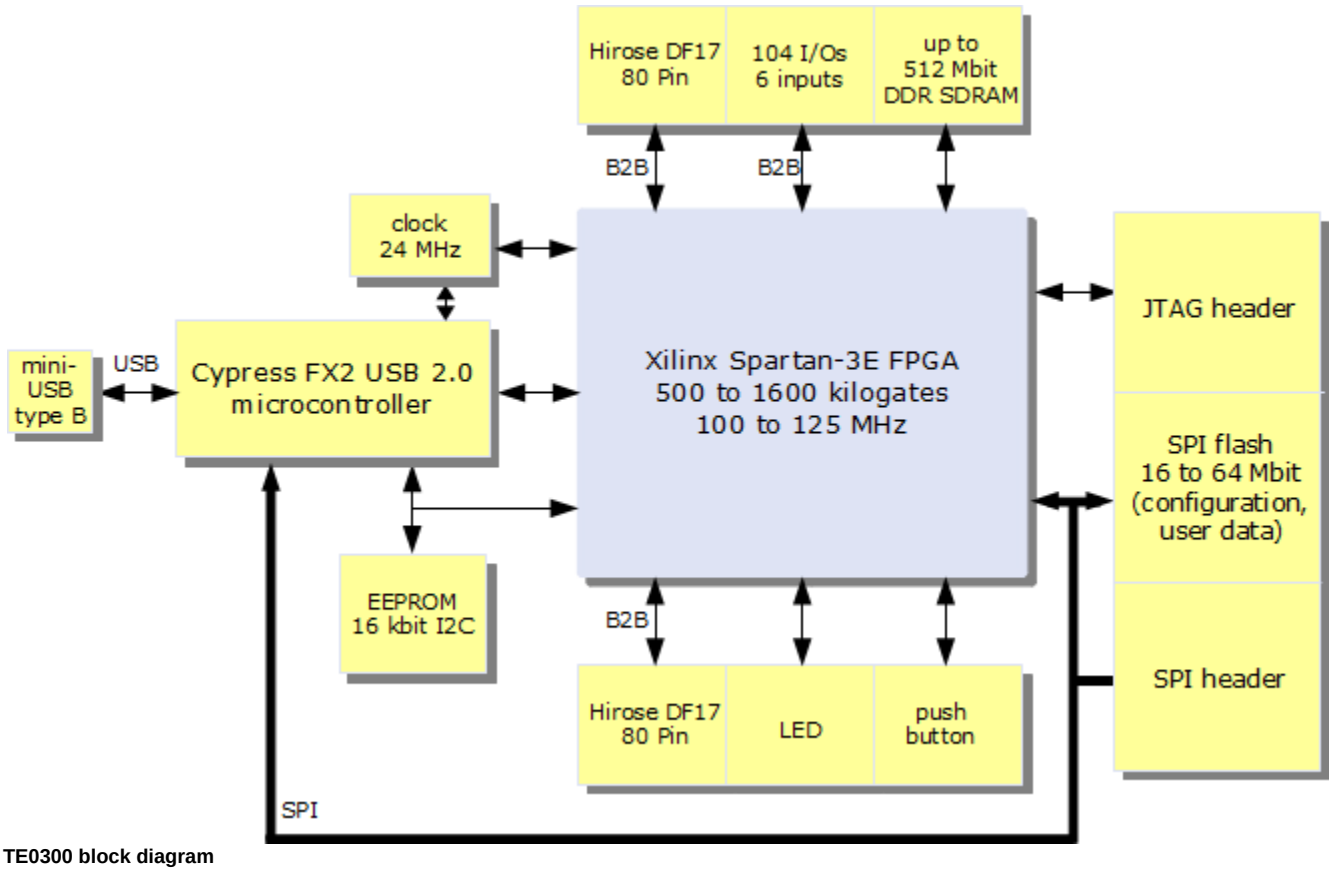


TE0300, bottom view

- 3 on-board high-power, high-efficiency, switch-mode **DC-DC converters** (1 A for each voltage rail: 1.2 V, 2.5 V, 3.3 V)
- Power supply via USB or B2B (carrier board)
- Flexible expansion via high-density **shockproof B2B** (board-to-board) connectors
- Most I/O's on the B2B connectors are routed as **LVDS pairs**
- Evenly spread supply pins for good **signal integrity**
- **Industrial temperature grade** available on request
- **Low-cost, versatile and ruggedized design**

Specifications

- **FPGA**: Xilinx Spartan-3E XC3S1200E – XC3S1600E
- **USB controller**: Cypress EZ-USB FX2 USB 2.0 microcontroller CY7C68013A-56LFX
- **Non volatile memory**: 16 MBit - 64 Mbit SPI Flash for FPGA-configuration and user data
- **Volatile memory**: 512 Mbit x 16 DDR SDRAM with up to 666 Mbyte/s
- Up to **110 FPGA user I/Os**
- Supply voltage range: 4.0 V – 5.5 V
- 1 push-button
- 1 LED
- Small size (only 40.5 mm x 47.5 mm)



TE0300 block diagram