profpga
Speed meets Flexibility

Zynq™ 7000 FPGA Module

Product Summary

The proFPGA product family is a complete, scalable, and modular multi FPGA Prototyping solution, which fulfills highest needs in the area of FPGA based Prototyping. Part of this modular and flexible system concept is the proFPGA Zynq™ 7000 FPGA module, which can be easily mounted on the proFPGA uno, duo or quad motherboard and mixed together with various other proFPGA FPGA modules like the proFPGA Virtex 7 2000T FPGA module. The proFPGA Zynq™ 7000 FPGA module addresses customers who require a complete embedded processing platform for high performance SoC Prototyping solution, IP verification and early software development. The innovative system concept and technologies offer highest flexibility and reuseability for several projects, which guarantees the best return on invest.

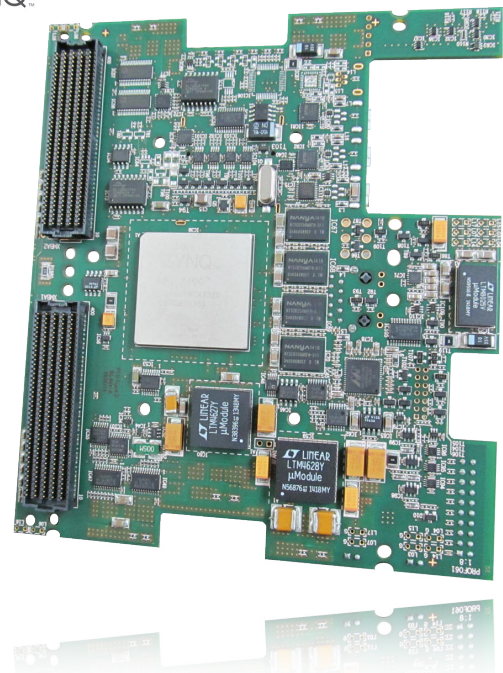## Complete Embedded Processing Platform

Equipped with a Xilinx Zynq™ XC7Z045 or XC7Z100 FPGA which combines a user FPGA with an ARM Core Processor (Dual ARM® Cortex™-A9 MPCore™ with CoreSight™) and several on board interfaces like USB 2.0 OTG, Gigabit Ethernet or ARM JTAG debug interface the Board offers a complete embedded processing platform. Further the board offers already 1 GB on board DDR3 and dual quad SPI flash memory.

Usage of ARM Processor for SoC development

Most of todays SoC designs contain an ARM processor. Instead of implementing the ARM core into a FPGA and occupying important FPGA resources the user can take the proFPGA Zynq module which has already an embedded ARM processor with verified interfaces like USB 2.0, OTG or Gigabit Ethernet and memories. Further the FPGA module offers a direct ARM debug interface that you user can benefit and use the proven ARM debug environment in combination with the proFPGA prototyping system and can focus on the verification of his design.

Highest Flexibility & System Speed

The FPGA module offers a total of 2 extension sites on the top with 260 standard I/Os and 16 high speed serial transceivers for extending the board with standard proFPGA or user specific extension boards like DDR-3 memory or to easily interconnect it to further proFPGA FPGA modules to extend the capacity. The well designed board is optimized and trimmed to guarantee best signal integrity to achieve highest performance and allow a maximum point to point speed of up to 1.2 Gbps over the standard FPGA I/O and up to 12.5 Gbps over the high speed serial transceivers of the FPGA.

XILINX®
ZYNQ™

SST Smart Stacking Technology
FMT FPGA Mixing Technology
DMBI Device Message Box Interface
ACM Advanced Clock Management

Key Features

- Xilinx Zynq XC7Z045 or XC7Z100 FPGA

- Embedded Dual ARM® Cortex™-A9 MPCore™ with CoreSight™

- 260 free user I/Os

- 16 dedicated high speed serial I/O transceivers

- Up to 2 individually adjustable voltage regions

- Various on board interfaces and memory like USB 2.0, Gigabit Ethernet, ARM JTAG, DDR3 & SPI Flash

- Works with proFPGA uno/duo/quad mother board and can be mixed with other proFPGA FPGA modules

proFPGA

Speed meets Flexibility

Innovative Technologies

SST
Smart Stacking Technology

Smart Stacking Technology

- Board detection when boards are plugged
- Automatic and right I/O voltage setting and programming with conflict detection
- Integrated interconnection self- and performance test
- Smart I/O resource management. No I/O resources get lost or get blocked by connectors

FMT
FPGA Mixing Technology

FPGA Mixing Technology

- Easy plugging and unplugging of FPGA modules on motherboards
- Various FPGAs from different vendors can be mixed
- Automatic scanning and detection of FPGA modules, when plugged
- Different FPGA configurations are controlled by proFPGA Messenger

DMBI
Device Message Box Interface

Device Message Box Interface

- High speed, low latency data exchange system
- Enables various use modes like remote system configuration and monitoring, debugging, application level programming, debugging and co-simulation
- Up to 3.5 Gbps data transfer rate
- Runs over USB, Ethernet or PCIe

ACM
Advanced Clock Management

Advanced Clock Management

- X- local clocks
- 8 global clock and sync signals per motherboard

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proFPGA Zynq™ 7000 FPGA Module Specification

Available FPGA types	- Xilinx Zynq XC7Z045 or XC7Z100 FPGA
Capacity	- 2.15 Million ASIC gates (XC7Z045) or 2.7 Million ASIC gates (XC7Z100)
Processor Core	- Dual ARM® Cortex™-A9 MPCore™ with CoreSight™
On Board Interfaces Processor Unit	- USB UART interface for debugging - USB 2.0 OTG - Gigabit Ethernet - ARM JTAG Connector for debugging - PL (Programmable Logic) - PS (Processing System) - System reset buttons
On Board Memories Processor Unit	- 1 GB DDR3 memory - Dual Quad SPI Flash Memory
Signaling rate	- Up to 1.2 Gbps (standard I/O)/ 12.5 Gbps (MGT)
Extension sites	- 2 extension sites with High Performance connectors

I/O resources	- 260 per FPGA module
	    - 1 x 148 I/Os to top side connector A1
	    - 1 x 98 I/Os to top side connector A2
	- Single-ended or differential

High speed I/O transceivers	- 16 per FPGA module
	    - 1 x 8 MGTs (up to 12.5 Gb/s) to top side connector A1
	    - 1 x 8 MGTs (up to 12.5 Gb/s) to top side connector A2

Available interface boards	- USB 3.0, PCIe Gen2/Gen3, MIPI, DVI, DDR3 memory, Gb Ethernet, etc.
Voltage regions	- 2 individually adjustable voltage regions per FPGA Module - Stepless from 1.2V up 3.3V for HR IOs and 1.2. to 1.8 for HP IOs
On Board Clocking	- 1 x 33.333 MHz clock is generated for the ARM Core as system clock - 1 x 50 MHz are provided to the FPGA PL
Clocking over proFPGA duo/quad Motherboard	- 8 global clock and sync signal inputs per motherboard - X fully synchronous derived clocks with sync signals
System Requirements	Works with proFPGA uno, duo or quad motherboard and can be mixed with other proFPGA FPGA modules
Configuration	- JTAG interface - On Board SD memory card
Power	External (optional) ATX Power Supply (12 V, 24 - 35 A output)
Dimensions	- 5.91" x 0.95" x 5.91" / 150 mm x 24 mm x 150 mm (width x height x depth) - 0.25 kg weight

proFPGA Zynq™ 7000 FPGA Module I/O and Clock Architecture

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prodesign
the system solution provider