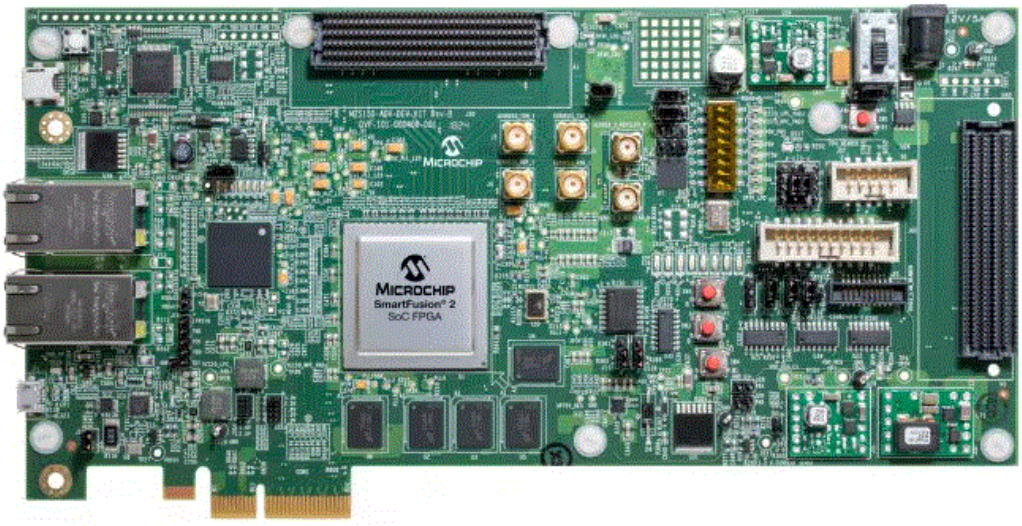
Contents [hide]

1 MICROCHIP SmartFusion2 SoC FPGA Advanced Development Kit
2 Introduction
3 Hardware Features
4 Programming
5 The Microchip Website
6 FAQ
7 Documents / Resources
7.1 References

MICROCHIP

MICROCHIP SmartFusion2 SoC FPGA Advanced Development Kit



Introduction

- Microchip’s SmartFusion®2 Advanced Development Kit has a full featured 150K LE SmartFusion2 system-on-chip (SoC) FPGA. This 150K LE device inherently integrates reliable flash-based FPGA fabric, a 166 MHz Arm® Cortex®-M3 processor, digital signal processing (DSP) blocks, static random-access memory (SRAM), embedded nonvolatile memory (eNVM), and industry-required high-performance communication interfaces all on a single chip. It also supports all the data security features that are available in the SmartFusion2 devices.
- The Advanced Development Kit board has numerous standard and advanced peripherals, such as PCIe®x4 edge connector, two FPGA mezzanine card (FMC) connectors for using many off-the-shelf daughter cards, USB, Philips inter-integrated circuit (I2C), two gigabit Ethernet ports, serial peripheral interface (SPI), and UART. A high-precision operational amplifier circuitry on the board helps to measure core power consumption by the device.
- The SmartFusion2 Advanced Development Kit includes 1 Gb of on-board double data rate3 (DDR3) memory and 2 Gb SPI flash—1 Gb connected to the Microcontroller Subsystem (MSS) and 1 Gb connected to the FPGA fabric. The serializer and deserializer (SerDes) blocks can be accessed through the PCIe edge connector, high-speed sub-miniature push-on (SMA) connectors, or through onboard FMC connector.

This kit enables you to design applications that involve one or more of the following:

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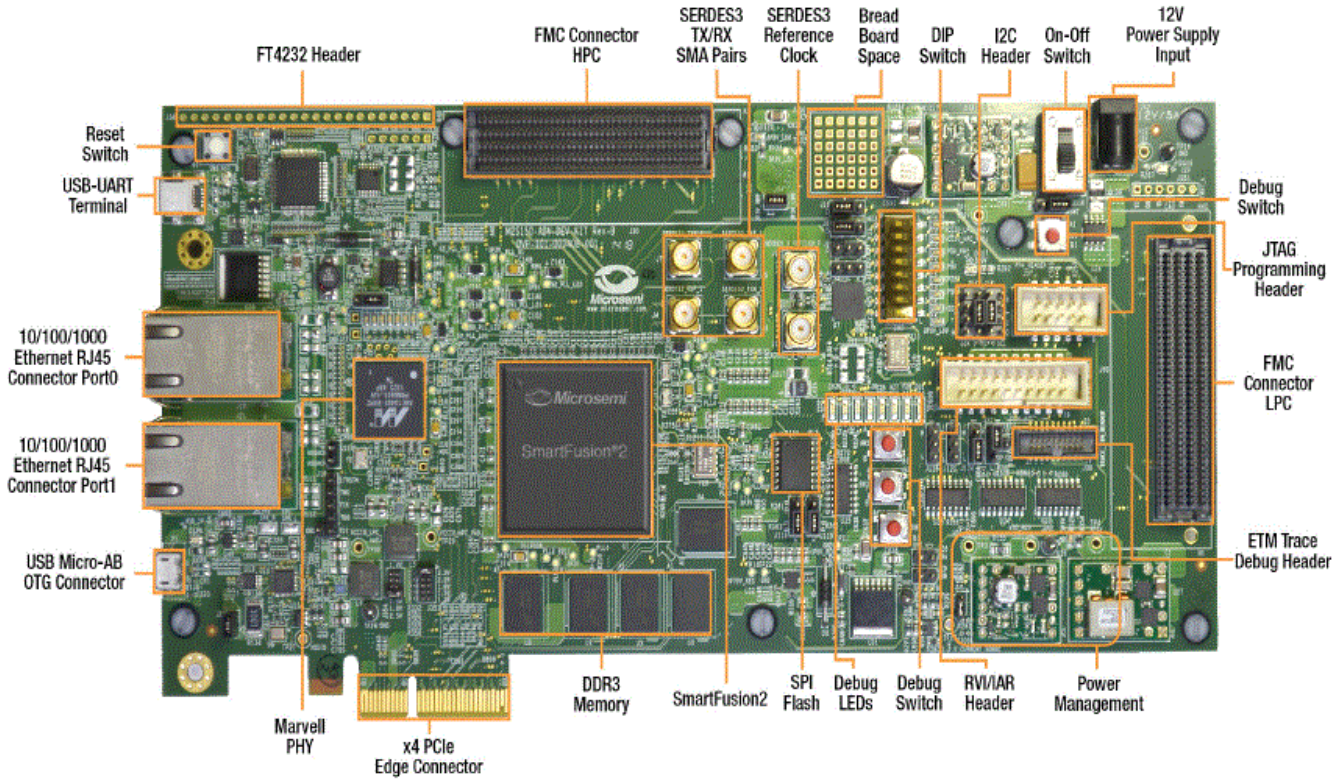
This kit enables you to design applications that involve one or more of the following:

Table 1. Kit Contents—M2S150-ADV-DEV-KIT

Quantity	Description
1	Development board with SmartFusion2 SoC FPGA 150K LE M 2S150TS-1FCG1152
1	USB A male to micro-B male cable, three feet long 28/28AWG USB 2.0
1	USB A to mini-B cable
1	12V, 5A AC power adapter
1	Quickstart card

Note: The M2S150-ADV-DEV-KIT is RoHS-compliant.

Figure 1. M2S150-ADV-DEV-KIT



Hardware Features

- SmartFusion2 SoC FPGA in the FCG1152 package (M2S150TS-1FCG1152, 150K LE).
- DDR3 synchronous dynamic random access memory (SDRAM) 4×256 MB for storing data. 256 MB for storing the ECC bits.
- SPI flash memory 1 Gb SPI flash connected to SPI port 0 of the SmartFusion2 MSS. 1 Gb SPI flash connected to SmartFusion2 FPGA fabric.
- PCI Express Gen 2 x1 interface.
- One pair SMA connectors for testing the full duplex SerDes channel.
- Two FMC connectors with HPC/LPC pinout for expansion.
- PCIe x4 edge connector.
- RJ45 interface for 10/100/1000 Ethernet.
- USB micro-AB connector.
- Headers for I2C, SPI, and GPIOs.
- FTDI programmer interface to program the external SPI flash.
- JTAG/SPI programming interface.
- RVI header for application programming and debug.
- Embedded trace macro (ETM) cell header for debug.
- QUAD 2:1 MUX/DEMUX high bandwidth bus switch.

- Dual in-line package (DIP) switches for user application.
- Push-button switches and LEDs for demo purposes.
- Current measurement test points.

Programming

- SmartFusion2 Advanced Development Kit implements an on-board programmer and does not require a standalone FlashPro hardware to program the board. FlashPro5 programming procedure needs to be used to program the device using on-board programmer.
- For more information regarding programming procedures, see SmartFusion2 SoC FPGA Advanced Development Kit User Guide.

Software and Licensing

- Libero SoC Design Suite offers high productivity with its comprehensive, easy-to-learn, easy-to-adopt development tools for designing with Microchip's low-power Flash FPGAs and SoC devices. The suite integrates industry standard Synopsys Synplify Pro® synthesis and Mentor Graphics ModelSim® simulation with best-in-class constraints management and debug capabilities.
- Download the latest Libero SoC release from: Libero SoC v2021.2 to v12.0 FPGA Design Tools.
- Follow the instruction in the Libero® SoC Software Download and License Installation Quick Start Guide and install the Gold license. For more information, see M2S150-ADV-DEV-KIT.

Documentation Resources

For more information about the SmartFusion2 SoC FPGA Advanced Development Kit, user guides, tutorials, and design examples, see the documentation at M2S150-ADV-DEV-KIT Documents.

The Microchip Website

Microchip provides online support via our website at www.microchip.com/. This website is used to make files and information easily available to customers. Some of the content

available includes:

- **Product Support** – Data sheets and errata, application notes and sample programs, design resources, user's guides and hardware support documents, latest software releases and archived software
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- Embedded Solutions Engineer (ESE)
- Technical Support

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- ISBN: 978-1-5224-9485-0

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FAQ

Does the kit require a standalone FlashPro hardware for programming?

No, the SmartFusion2 Advanced Development Kit implements an on-board programmer and does not require a standalone FlashPro hardware for programming.

Where can I find more information about programming procedures?

Refer to the SmartFusion2 SoC FPGA Advanced Development Kit User Guide for detailed programming procedures.

Documents / Resources

	MICROCHIP SmartFusion2 SoC FPGA Advanced Development Kit [pdf] User Guide SmartFusion2 SoC FPGA Advanced Development Kit, SoC FPGA Advanced Development Kit, FPGA Advanced Development Kit, Advanced Development Kit, Development Kit

References

- User Manual

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Advanced Development Kit, Development Kit, FPGA Advanced Development Kit, MICROCHIP, SmartFusion2 SoC FPGA Advanced Development Kit, SoC FPGA Advanced Development Kit

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