



# Microsemi M2S150-ADV-DEV-KIT SmartFusion2 SoC FPGA Advanced Development Kit User Guide

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**Microsemi M2S150-ADV-DEV-KIT SmartFusion2 SoC FPGA Advanced Development Kit**

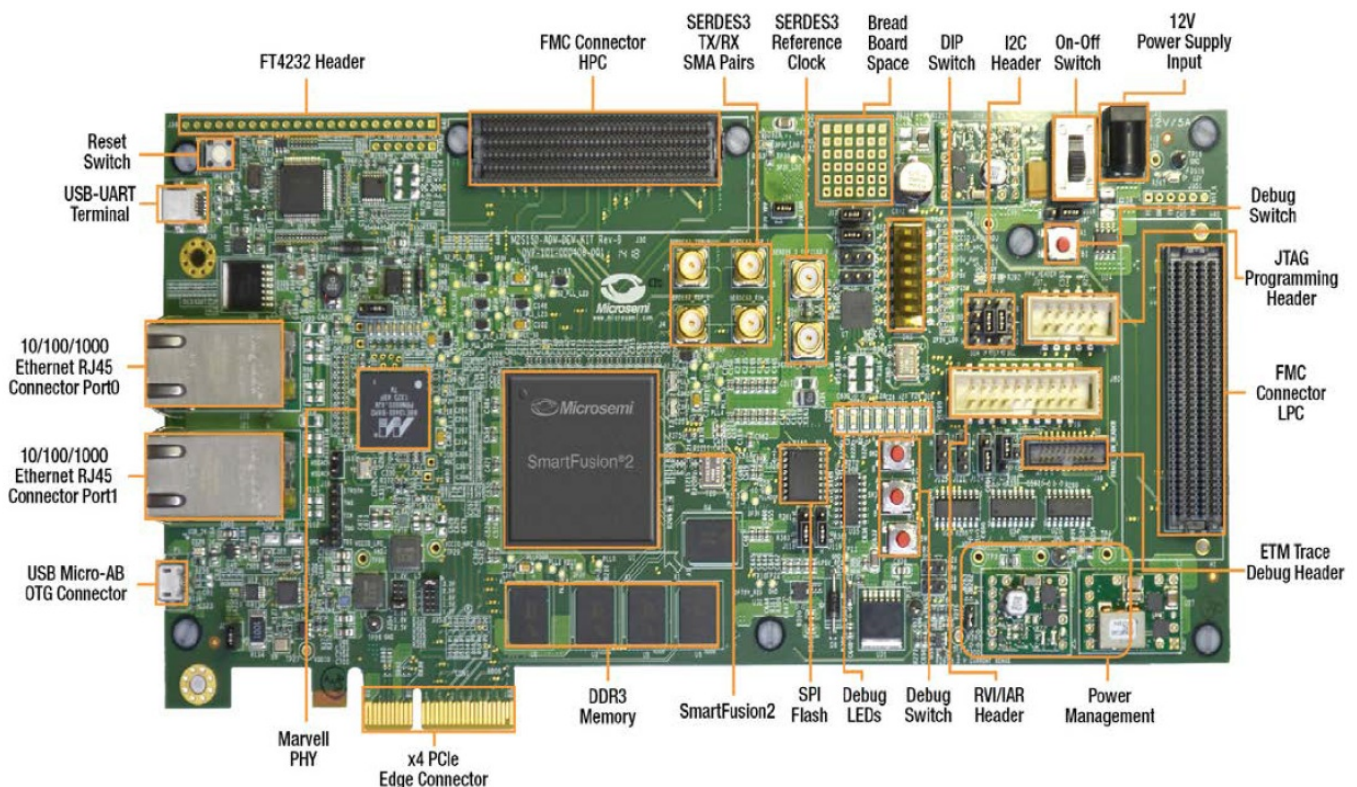


## Kit Contents—M2S150-ADV-DEV-KIT

### Quantity/Description

- 1 Development board with SmartFusion2 SoC FPGA 150K LE M2S150TS-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 12 V, 5 A AC power adapter
- 1 Quickstart card
- 1 Software ID letter for Libero Gold License

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



### Overview

Microsemi'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 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 peripheral component interconnect express (PCIe) edge connector or high speed sub-miniature push-on (SMA) connectors or through onboard FPGA mezzanine card (FMC) connector.

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

- Embedded ARM Cortex-M3 processor-based systems
- Motor control
- Industrial automation
- Power measurement
- Security applications
- FMC expansion
- High speed I/O applications
- Universal serial bus (USB) applications (OTG support)
- Imaging and Video application

## 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 of 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, 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 refer to SmartFusion2 SoC FPGA Advanced Development Kit User Guide at [www.microsemi.com/document-portal/doc\\_download/134215-ug0557-smartfusion2-soc-fpga-advanced-development-kit-user-guide](http://www.microsemi.com/document-portal/doc_download/134215-ug0557-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 Microsemi's low-power Flash FPGAs and SoC. 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

[www.microsemi.com/products/fpga-soc/design-resources/design-software/libero-soc#downloads](http://www.microsemi.com/products/fpga-soc/design-resources/design-software/libero-soc#downloads)

A Software ID letter enclosed with the kit contains Software ID and instructions on how to generate a Libero Gold license.

For further details on how to generate a gold license please visit

[www.microsemi.com/products/fpga-soc/design-resources/dev-kits/smartfusion2/smartfusion2-advanced-development-kit#licensing](http://www.microsemi.com/products/fpga-soc/design-resources/dev-kits/smartfusion2/smartfusion2-advanced-development-kit#licensing)

## Documentation Resources

For more information about the SmartFusion2 SoC FPGA Advanced Development Kit, including user's guides, tutorials, and design examples, see the documentation at [www.microsemi.com/products/fpga-soc/design-resources/dev-kits/smartfusion2/smartfusion2-advanced-development-kit#documents](http://www.microsemi.com/products/fpga-soc/design-resources/dev-kits/smartfusion2/smartfusion2-advanced-development-kit#documents)

## Support

- Technical support is available online at [www.microsemi.com/soc/support](http://www.microsemi.com/soc/support) and by email at [soc\\_tech@microsemi.com](mailto:soc_tech@microsemi.com)
- Microsemi sales offices, including representatives and distributors, are located worldwide.
- To find your local representative, go to [www.microsemi.com/salescontacts](http://www.microsemi.com/salescontacts)

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## Documents / Resources

	<p><a href="#">Microsemi M2S150-ADV-DEV-KIT SmartFusion2 SoC FPGA Advanced Development Kit [pdf] User Guide</a></p> <p>M2S150-ADV-DEV-KIT SmartFusion2 SoC FPGA Advanced Development Kit, M2S150-ADV-D EV-KIT, SmartFusion2 SoC FPGA Advanced Development Kit, Advanced Development Kit, Development Kit</p>
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## References

- [Microsemi | Semiconductor & System Solutions | Power Matters](#)
- [Microsemi | Semiconductor & System Solutions | Power Matters](#)
- [Microsemi | Semiconductor & System Solutions | Power Matters](#)
- [Libero® SoC Design Suite Versions 2022.3 to 12.0 | Microchip Technology](#)
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