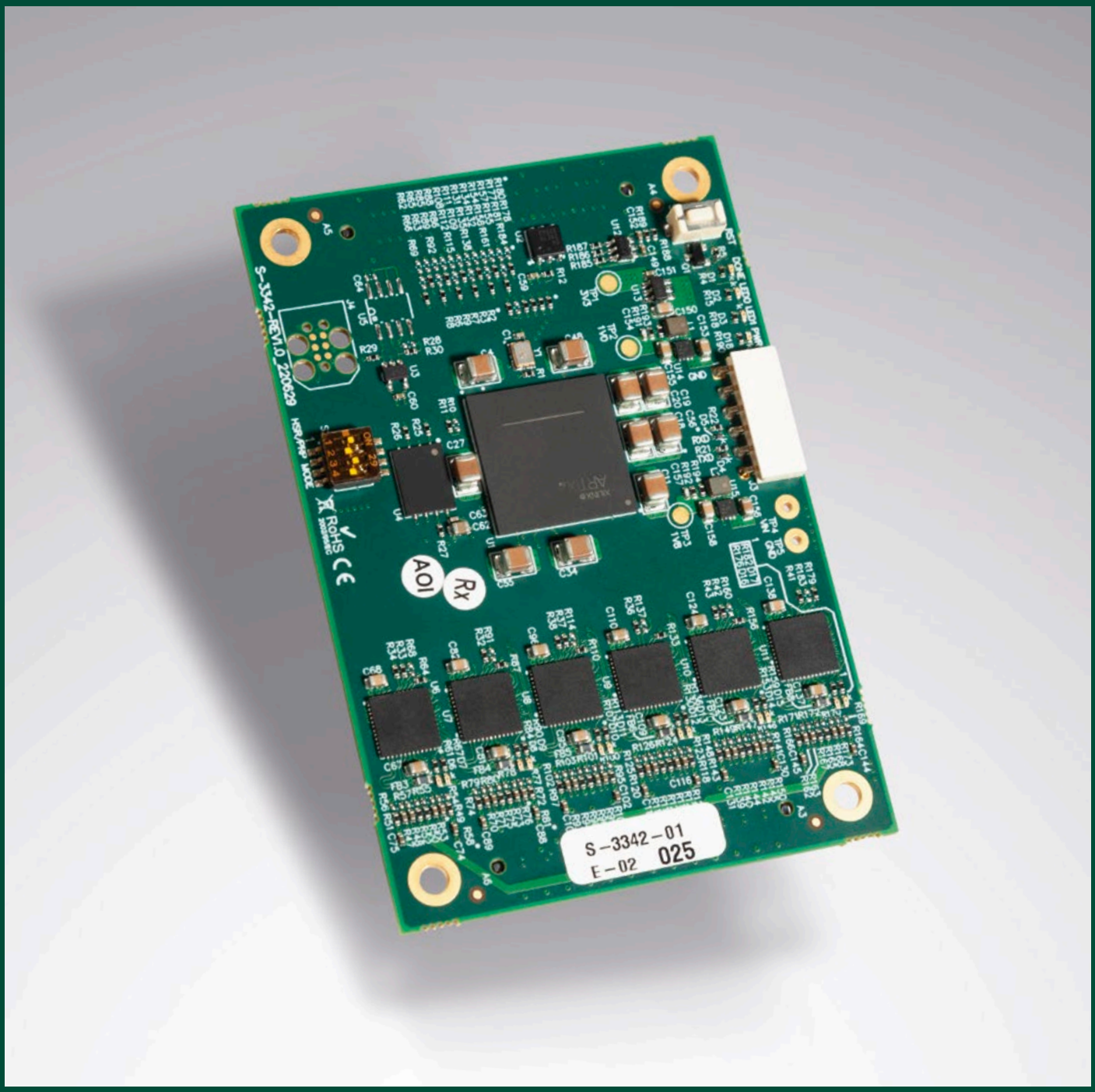
SocTek® Modules



Up to 6x 10/100MbE ports pluggable module
with reconfigurable networking capabilitie

SMARTix Module

Overview

SMARTix is a pluggable System-on-Module (SoM) designed to streamline the implementation of custom-made Ethernet networking designs. This facilitates an easy integration of Ethernet industrial networks into equipment for the Electric, Transportation, Aerospace, and Industrial Automation sectors. The SMARTix module is built on the AMD/Xilinx Artix-7 series FPGA.

This SoM enables the implementation of custom switches and/or end-equipment with robust networking capabilities. Network frame processing can be executed in hardware using specific SOC-E IP Cores.

What sets the SMARTix module apart is its high level of firmware flexibility. It functions as a programmable platform, allowing customers to incorporate their own FPGA-based designs. Alternatively, it can be preprogrammed with a firmware based on SOC-E's IP Cores, featuring technologies like HSR/PRP/RSTP for redundancy and/or PTP for time synchronization.

To facilitate its integration into customer platform, a compatible carrier board is available for purchase. A reference firmware and FPGA design is also available from SOC-E, along with carrier design files (schematics, connector information and CAD files).

With SMARTix module, you have the power to transform your industrial network within your reach.

Key Features

- Customizable functionality: FPGA bitstream can be customized to fit customer use case requirements.
- Multiple fast ethernet PHY's: includes up to 6x Ethernet PHYs, with direct connection to the programmable logic (PL) the FPGA.
- Industrial grade components only.
- Reduced time-to-market: thanks to the use of SOC-E networking IP Core portfolio, a smooth integration is possible.
- Accurate technical support: whenever using SMARTix along with SOC-E IP Cores customers will receive first hand detailed technical advice from SOC-E support team during development & integration phases.

Functionality Examples

- 6x 10/100M external ports managed Ethernet switch with IEEE1588 (PTP)
- HSR/PRP Redundancy Box (RedBox)
- HSR Ring coupler (QuadBox)

Technical Specifications

Communication Interfaces

- Up to 6x 10/100MbE Ethernet PHY
- Copper (10BASE-T, 100BASE-TX) and Fiber (100BASE-FX) supported

Memory

- 256 Mb Quad SPI Flash
- 2Kbit EEPROM with unique MAC address available for the user
- 512 bit user-programmable EEPROM for key storage with SHA-256 hash algorithm protection

SoC

- AMD Artix-7 FPGA (different options available: XC7A35T / XC7A50T / XC7A75T / XC7A100T)
- FPGA resources (XC7A100T)
  - 101,440 Logic Cells
  - 63,400 Look-up Tables (LUTs)
  - 126,800 Flip-Flops
  - Total Block RAM 4.86Mb

Other Interfaces

- 24x PL GPIOs available at the board-to-board connector
- 4x LED indicators: Power-up LED, FPGA “DONE” LED and 2 General purpose LEDs
- I2C temperature sensor
- UART available at the board-to-board connector
- DIP switch to configure specific parameters of the FPGA firmware
- Debug connector (JTAG)

Physical & Electrical Characteristics

- VCC_VIN: Compatible with 3.3V
- Power consumption: typically below 5W
  - As a reference, power consumption for a SMARTix with with 6 PHYs and XC7A75T FPGA is 4.2W
- Dimensions: 88mm(L) x 60mm(W) x 14mm(H), Weight: ~25g
- Component temperature range: -40°C to +85°C
- Operating temperature range: Depends on the thermal dissipation system installed by customer (-40°C to +55°C recommended). 65ºC ambient temperature should be easily achievable
- Storage temperature range: -40°C to +85°C

Warranty

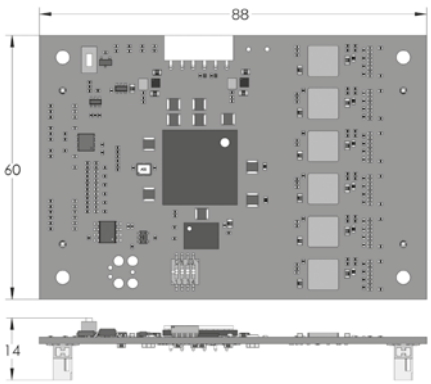
- 2 years

Ordering Code

Ordering code
SOM47.42-ID1 (SMARTix module ID1)

To know more about other available references, please contact your sales representative.

Dimensions



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By

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SOC-E®

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