

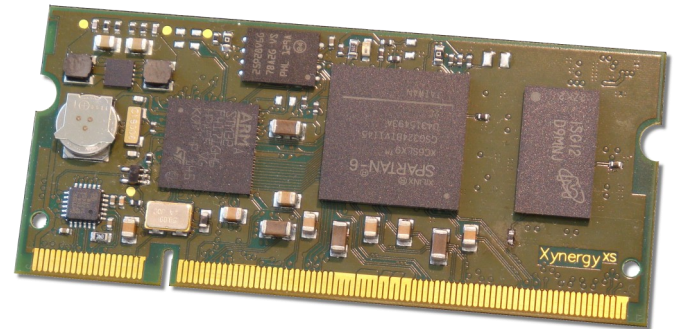
Xynergy^{XS}

Versatile Controller module with STM32 Cortex-M4 Spartan-6 FPGA, 128MB DDR3, 10/100 Ethernet, CAN, UART, USB-OTG, SDIO, I²C, ADC/DAC



Xynergy^{XS} combines STMicroelectronics' STM32F417 controller, based on ARM® Cortex™-M4, with a Xilinx Spartan-6 low-cost FPGA XC6SLX16. The controller's FSMC interface is used for parallel 16-bit connection to the FPGA ensuring high-speed data transfer between the two devices. The STM32F417 core can be clocked at up to 168 MHz and has up to 1 MB on-chip flash and 192 KB on-chip SRAM. In addition, the 1Gb (64M x 16) DDR-3 memory, which is connected to the FPGA, can be made transparent via the FSMC bus, enabling the controller to use it like external memory.

The micro-controller of the **Xynergy^{XS}** provides numerous communications interfaces, including 10/100 Ethernet with PHY, USB-OTG, CAN (two channels), one SPI, one COM-Port (RX/TX only), I²C (two channels), an SDIO port, seven ADC channels, two DAC channels and up to 21 general purpose I/O lines. All interface signals are available at the 200-pin edge connector.



Specifications:

Power consumption: 3 Watts* @ 3.3V (alternate V_{IO} for the FPGA is 2.5V (Bank 0 & 2))

Micro-Controller: STM32F417 in BGA176

FPGA: Spartan-6 (XC6SLX16 in BGA324, LX45 optional)

External Memory: 128 MBytes DDR3, 64 Mbit SPI flash

I/O: Up to 130 general purpose I/O pins, supporting different I/O standards and protocols (see text)

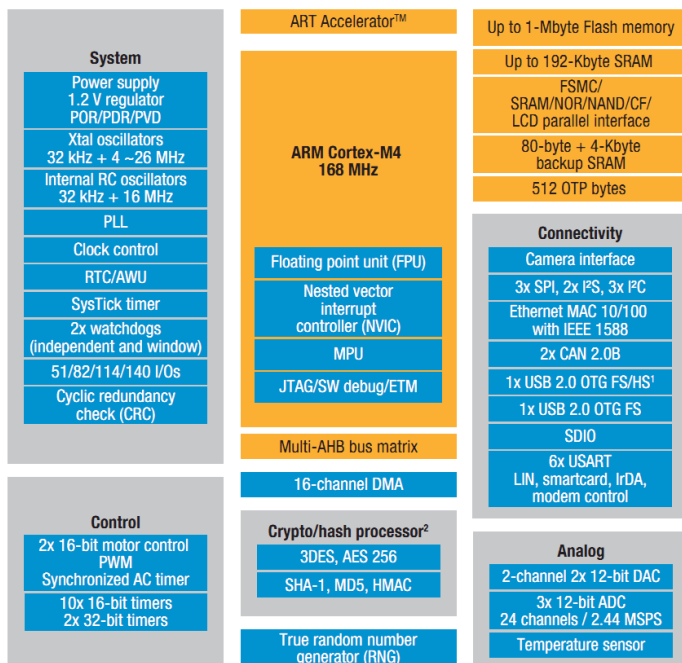
Physical Dimensions: 67.6 x 30.0 x 6mm (SO-DIMM200)

Weight: approx. 6grams

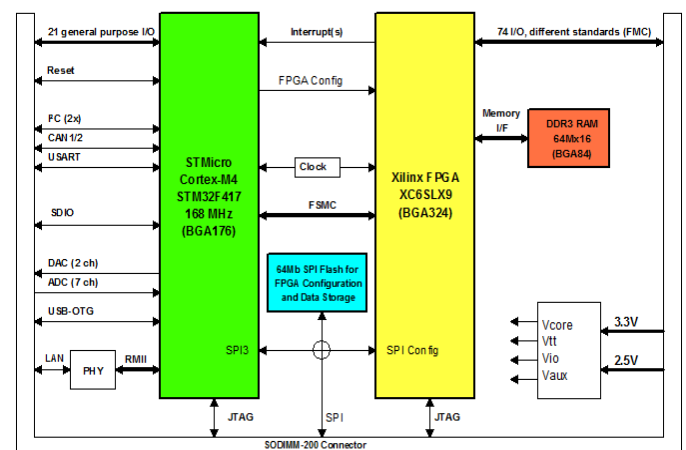
Matching Socket: e.g., TE Connectivity 1473005-4

Bottom/Top Component Height: 2.0/2.0mm (max.)

**) depending on the application*



STM32F417 Block Diagram



Simplified Xynergy^{XS} Block Diagram

The FPGA expands I/O capabilities of the **Xynergy^{XS}** by delivering up to 35 differential (LVDS) I/O lines, useful for connecting FMC compliant expansion boards, and four single-ended general purpose I/O lines.

For the pinout of the SO-DIMM connector, please refer to: downloads.dsp-sys.de/XynergyXS/PinoutXynergyXS.pdf

Also available is a motherboard with all pins accessible at 100mil header plus JTAG headers for easy evaluation.

Silica's Xynergy board may be used as a development platform for our **Xynergy^{XS}** module. More information on this product can be found at www.silica.com/Xynergy.

Typical applications:

Point of Sale (PoS), Industrial Control, Industrial Imaging, Motion Control, M2M Communication etc.



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