

NXP i.MX 93 - Arm® Cortex® CPU System on Module 3SM1010 Series



FEATURES

- Efficient Machine Learning (ML) Acceleration: create more capable, cost-effective and energy-efficient ML applications.
- Advanced Security with EdgeLock® Secure Enclave
- Supports all NXP i.MX 93 processor variants
- Pin to pin compatible with 3SM1009 i.MX 8M Plus SoM
- Small dimensions only 40x71mm
- 230 pin Card Edge connector
- Great pin multiplexing flexibility
- Ideal for automotive, industrial and consumer IoT market applications

CPU

- NXP i.MX 93 Solo/Dual Arm® Cortex®-A55 core
- Neural Processing Unit (NPU) option
 - 0.5 TOP/s Neural Network performance
- Supports Arm® Cortex®-A55 core frequency up to 1700 MHz
- Additional Cortex-M33 Core up to 250 MHz

DRAM MEMORY

- Up to 2GB LPDDR4 memory with 16 bit wide Bus

STORAGE / BOOT MEMORY

- From 8 to 64 GB eMMC Flash memory

MULTIMEDIA AND HUMAN INTERFACE¹²

- PXP 2D accelerator
- LCDIF display outputs
 - LVDS display (up to 1366 x 768 or 1280 x 800)
 - 4-lane MIPI-DSI display output
- ISI camera interface:
 - MIPI-CSI input compliant to MIPI-DSI spec v1.2
 - Image processing for one processed camera stream at 1080p30 or unprocessed camera stream at 2K depending on system load and use case
- Audio Interfaces:
 - S/PDIF Audio Input and output
 - SAI input / output for external audio codec

I/O PERIPHERALS¹²

- 2 x USB 2.0 OTG
- SDIO 3.0 Bus Interface
- Up to 5 x UART Interfaces
- Up to 2 x LPSPI Interfaces
- Up to 4 x I2C Interfaces
- Up to 2 x PWM outputs
- 2 x Ethernet 1Gbps with on-board PHY (optional)
- Up to 2 x CAN Bus 2.0B / CAN FD ports
- Integrated Secure Element co-processors (optional)
- Integrated Temp Sensor (optional)
- More GPIOs available & SW configurable (optional)
- FRAM (optional)
- 4 x ADC inputs

SYSTEM

- 230 pin edge connector
- Single +5 VDC ±5% power supply
- On board regulators for all integrated functions
- Power consumption depends on MPU clock frequency / state.

TEMPERATURE³⁴

- 0 to 70°C for commercial version
- -40 to 85°C for industrial version
- -40 to 105° for automotive version

OPERATING SYSTEMS

- Linux (Cortex® - A55 core) + FREERTOS (Cortex® - M33)

¹ Please note that not all the functions may be available simultaneously, due to pin mux limitation of CPU case. We can check if our SoM is compatible with your application, contact us for more information

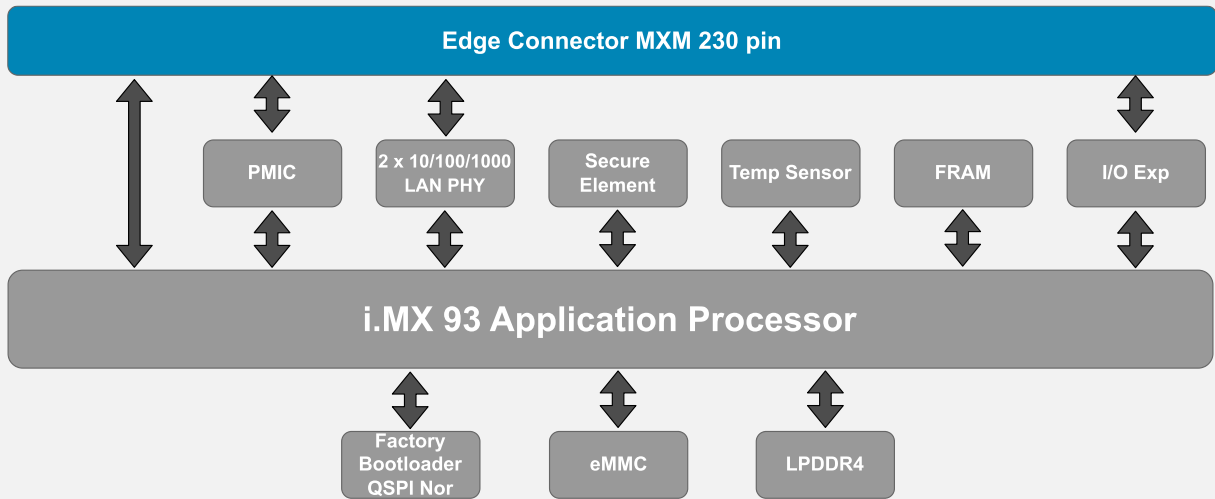
² Some functions require transceiver or additional circuitry on expansion board.

³ These temperatures are the ambient operating temperature ranges for the components used into SoM, with exception of iMX 93 processor, which is specified on junction operating temperature range, 0-95°C for commercial version and -40-105°C for industrial version and -40 to 125° for automotive version. SoM ambient operating temperature depends on the application and on the cooling measures applied

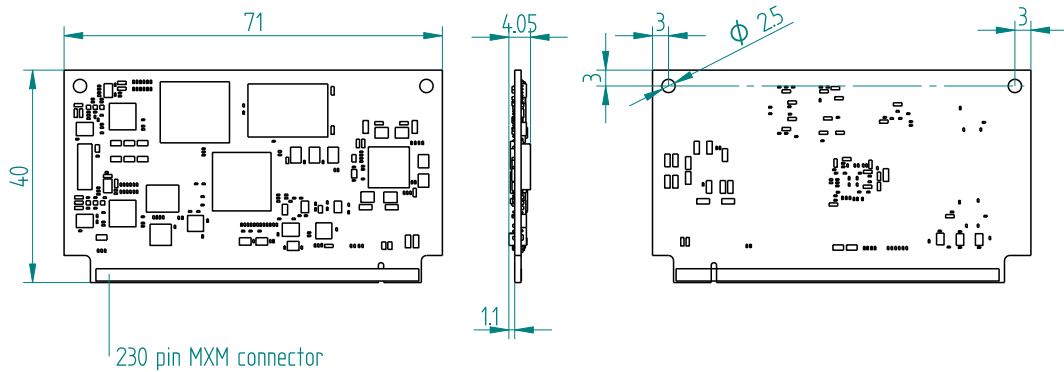
⁴ Some ordering options are not available in automotive version. Contact Elettronica GF for more information



BOARD DIAGRAM



DIMENSIONS (mm)



230 pin MXM connector

ORDERING INFORMATION OPTIONS

3SM1010 **1** **B** **1** **C** **1** **B** **1** **A** **2**

Processor

- i.MX 93 Dual NPU 1.7 GHz 1
- i.MX 93 Dual 1.7 GHz 2
- i.MX 93 Dual 900 MHz 3
- i.MX 93 Single NPU 1.7GHz 4
- i.MX 93 Single 1.7GHz 5
- i.MX 93 Single 900 MHz 6

LPDDR4

- 512MB A
- 1GB B
- 2GB C

eMMC

- eMMC 8GB 1
- eMMC 16GB 2
- eMMC 32GB 3
- eMMC 64GB 4

Secure Element

- ATECC608A A
- SE050 B
- SE050 and ATECC608A C
- No Secure Element D

Temp Sensor

- Yes 1
- No 2

FRAM

- Yes 1
- No 2

Ethernet

- 1 LAN port A
- 2 LAN ports B
- None C

I/O Expander

- Yes A
- No B

Temp. Grade

- 0°C / 70°C 1
- 40°C / 85°C 2
- 40°C / 125°C 3

Default configuration:

3SM10101B1C1B1A2 i.MX 93 Dual NPU 1.7GHz, 1GB LPDDR4, 8GB eMMC, SE050, ATECC608A, Temp Sensor, 2 LAN Ports, FRAM, I/O Exp, Industrial Grade

Some code combinations are not allowed and others are available on customization only, for more information please contact Elettronica GF sales dept.

