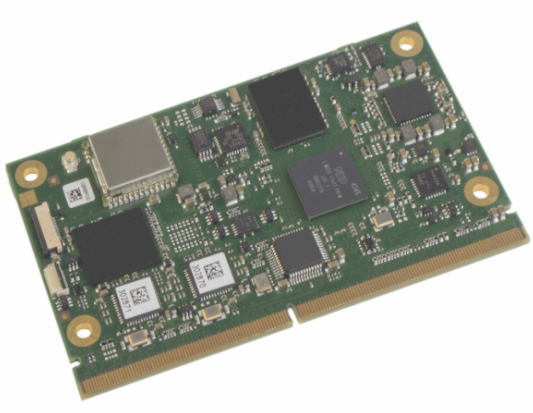
TRIA SM2S-IMX91

NXP® i.MX 91 Arm® Cortex®-A55 / M33



82 x 50 mm

2-3 W

-40 +85 °C

Highlights

- Single core Arm Cortex-A55 Applications Processors up to 1.4GHz
- Media Processing Engine (MPE) with Arm Neon™ technology
- Up to 2GB LPDDR4 SDRAM with inline ECC
- Up to 256GB eMMC Flash
- 4x USB 2.0 Host interfaces
- 1x USB 2.0 Host/Device interface
- 2x Gigabit Ethernet
- Wireless Module (optional)
- 1x MMC/SD/SDIO interface
- 2x CAN-FD interfaces
- 1x I2S Audio interfaces
- 14x GPIO
- UART, SPI, I2C
- SMARC 2.2 compatible
- Energy Flex Architecture
- Optimized design for low power applications

Technical Data

Technology	Arm
Formfactor	SMARC Short Size
CPU	NXP i.MX 91 Arm Cortex-A55 Applications Processors, single-core, up to 1.4GHz, consumer and industrial grade
Chipset	Integrated in SOC
RAM	Up to 2GB 2400MT/s LPDDR4 SDRAM, soldered, inline ECC support
Flash	Up to 256GB eMMC Flash
Storage Interfaces	1x MMC/SD/SDIO
USB	1x USB 2.0 Host/Client, 4x USB 2.0 Host or 1x USB 2.0 Host/Client, 1x USB 2.0 Host (optional)
Serial Interfaces	2x UART with 2-wire hand shake 2x UART w/o hand shake *Note: SER2 is not available, when the WIFI/BT module is populated*
Bus Interfaces	4x I2C up to 400 Kbit/s 2x CAN-FD / CAN 2.0B 2x SPI (with two chip selects)
Display Controller	not available
Display Interfaces	not available
Network Interface	2x 10/100/1000BASE-T Ethernet (one interface with TSN/1588 support) HD Wireless SPB611 (dual band 2.4/5GHz, full support for 802.11a/b/g/n/ac/ax, industrial temperature, Bluetooth 5.2, soldered (optional) *Note: SER2 is not available, when the WIFI/BT module is populated*
Audio Interface	1x I2S Audio
Security Device	Advanced Security, Safety, and Reliability integrated in the SOC Integrated EdgeLock secure enclave enables autonomous management of security functions, including runtime attestation, silicon root of trust, reusable certifications, trust provisioning, and fine-grain key management augmented by extensive crypto services for advanced attack resistance Trusted Platform Module (TPM) 2.0 (optional)
Miscellaneous	Watchdog Timer for system reset (programmable, 1s ... 600s) RTC / temperature compensated (optional) 14x GPIO, configurable as input or output, interrupt capable 64kbit ID EEPROM on I2C bus Camera Interface not available
Feature Highlights	SMARC 2.2 compatible
Firmware	uboot
OS Support	Linux Board Support Package Android Board Support Package (on request)
Power Requirement	Power Supply +5V +/-5% Power Consumption 2-3 W typ. (depending on CPU and optional features)

Environment	Temperature Range: Commercial: 0° ... 70°C (operating) -20° ... 85°C (storage) Extended: -25° ... 85°C (operating) -40° ... 85°C (storage) Industrial: -40° ... 85°C (operating) -40° ... 85°C (storage) Humidity: 5 ... 95% (operating, non-condensing) 5 ... 95% (storage, non-condensing)
Dimensions	82 x 50 mm
Certificates	UL / CE
Cooling	Heatspreader
Carrier	TRIA SM2-MB-EP1 TRIA SM2-MB-EP5

Technical Data for TRIA SM2S-IMX91

Order Reference

Order No.	Description	Reference	Status*
119073	SMARC module based on NXP i.MX 9131, Single Core Cortex-A55 at 1.4GHz, 1GB LPDDR4, 16GB eMMC Flash, 2x GbE LAN, 1x USB2.0 Host, 4x USB2.0 Host/Device, no Display and Camera interface; industrial temperature -40...+85°C	MSC SM2S-IMX91-SC-04N0N80I PCBFTX	PV
119075	SMARC module based on NXP i.MX 9131, Single Core Cortex-A55 at 1.4 GHz, 512MB LPDDR4, 4GB eMMC Flash, 2x GbE LAN, 1x USB2.0 Host, 1x USB2.0 Host/Device, TPM, no Display and Camera interface; industrial temperature -40...+85°C	MSC SM2S-IMX91-SC-92N0N91I PCBFTX	PV

Ordering Information for TRIA SM2S-IMX91

*PV = Preferred variant; OR = on Request (in OEM quantities only)

Accessories

Carrier Options

Order No.	Description	Reference
68488	SMARC 2.0 Embedded Platform with PCI Express x4 slot, GbE, SATA, USB 3.0, USB 2.0, USB 2.0 OTG, RS232, CAN, SPI, eSPI, SMBus, I2C and GPIO interface, LVDS/eDP, DisplayPort and HDMI display interface, regulated backlight supply, HD/I2S audio interface, MIPI CSI-2 camera interface, mini PCI Express card slot, SD card slot, fan connector, CMOS battery, Mini-ITX form factor (170 x 170 mm), ATX power connector and single 12V/24V power jack, commercial temperature range 0..+70°C	MSC SM2-MB-EP1-001 PCBFTX
83977	SMARC 2.1 compatible embedded platform (146 x 80mm), 10-36V input voltage, 3x RS232, 2x CAN, dual RJ45 LAN with LED (1 x LAN i210) , 1x M.2 2280 Key M slot, mPCIe slot, 1x USB 3.0 Type A, 1x USB 2.0 Type A, 1x USB 2.0 internal, 1x µUSB 2.0 Host/Device, 2x SPI, I²C, 8 GPIO on FC, 1x HDMI, LVDS/eDP/DSI on JILI30 connector, µSD Card Slot, regulated backlight supply, I2S Audio, 1W Mono, camera connector, RTC battery. Industrial temperature range -40..+85°C, ARM full version	MSC SM2S-MB-EP5-002 PCBFTX
83981	SMARC 2.1 compatible embedded platform (146 x 80mm), 10-36V input voltage, 2x UART, 1x RS232, 2x CAN, 1x RJ45 LAN with LED, 1x USB 2.0 Type A, 1x USB3.0 Type A, 1x USB 2.0 internal, 1x µUSB 2.0 Host/Device, 2x SPI, 12 GPIO on FC, 1x HDMI , µSD Card Slot, LVDS/ eDP/DSI on JILI30 connector, regulated backlight supply, RTC battery. Industrial temperature range -40..+85°C, ARM slim version	MSC SM2S-MB-EP5-004 PCBFTX
113145	SMARC 2.1 compatible embedded platform (146 x 80mm), 10-36V input voltage, 3x RS232, 1x RS485, 1x CAN, dual RJ45 LAN with LED, 1x M.2 2280 Key M slot (PCIeC, PCIeD), mPCIe slot (PCIeA), 1x USB 3.0 Type A, 1x USB 2.0 Type A, 1x USB 2.0 internal, 1x µUSB 2.0 Host/ Device, 2x SPI, I²C, 8 GPIO on FC, 1x HDMI, LVDS/eDP/DSI on JILI30 connector, µSD Card Slot, regulated backlight supply, I2S Audio, 1W Mono, camera connector, RTC battery. Industrial temperature range -40..+85°C, ARM Plus version	MSC SM2S-MB-EP5-006 PCBFTX
115138	SMARC 2.1 compatible embedded platform (146 x 80mm), 10-36V input voltage, 3x RS232, 2x CAN, dual RJ45 LAN with LED (from module), 1x M.2 2280 Key M slot, mPCIe slot, 1x USB 3.0 Type A, 1x USB 3.0/DisplayPort Type C , 1x USB 2.0 Type A, 1x USB 2.0 internal, 1x µUSB 2.0 Host/Device, 2x SPI, I²C, 12 GPIO on FC, 1x DisplayPort++ , LVDS/eDP/DSI on JILI30 connector, µSD Card Slot, regulated backlight supply, I2S Audio with amplifier, system fan connector, camera connector, RTC battery. Industrial temperature range -40..+85°C	MSC SM2S-MB-EP5-012 PCBFTX

Carrier Options for Arm based TRIA SMARC Modules

Other Accessories

Order No.	Description	Reference
82479	Debug Console (UART) Adapter for i.MX6-based Qseven and nanoRISC modules, with 8-pin FFC cable to connect COM module to 9-pin D-Sub connector	MSC Debug Console Adapter
68948	Debug Adapter for i.MX6-based Qseven, SMARC and nanoRISC modules, with 10-pin FFC cable to connect to COM module, adapter provides headers for JTAG connection to Lauterbach and/ or Goepel debuggers	MSC JTAG Adapter FFC 10-pin

Other Accessories for Arm based TRIA SMARC Modules

Starter Kits

Order No.	Description	Reference
97502	SMARC 2.0 Starterkit for NXP i.MX 9 based Modules. Includes TRIA SM2-MB-EP1 Baseboard, Heatspreader/Heatsink, SD Card with USB Card Reader, Power Supply and suitable cable kit. The StarterKit does not include the TRIA SM2S-IMX95/IMX952/IMX937/ IMX93/IMX91 module. Please order your choice of module separately.	MSC SM2-SK-IMX9-EP1-KIT001 BRDFTX

Starter Kits TRIA SM2S-IMX95/IMX952/IMX937/IMX93/IMX91

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