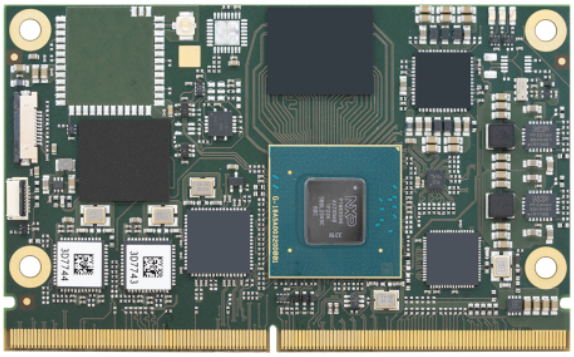
TRIA SM2S-IMX95

NXP® i.MX 95 Arm® Cortex® -A55 / M7 / M33

82 x 50 mm



5-6 W

-40 +85 °C

Highlights

- Hexa core Arm Cortex-A55 up to 2.0GHz
- Arm Cortex-M7 Real Time Processor at 800MHz
- Arm Cortex-M33 Real Time Processor at 333MHz
- NXP eIQ Neutron Neural Processing Unit
- NXP Image Signal Processor
- Arm Mali Graphics Processing Unit
- Video Processing Unit up to 4k decode/encode
- Up to 16GB LPDDR5 SDRAM with inline ECC
- Up to 256GB eMMC Flash
- Dual-channel LVDS / MIPI-DSI x4 / HDMI interface
- Dual MIPI CSI-2 Camera interface
- 2x PCI Express x1 Gen. 3
- 2x USB 3.0 Host, 2x USB 2.0 Host, 1x USB 2.0 Host/Device interface
- 2x Gigabit Ethernet
- 10 Gigabit Ethernet
- Wireless Module
- 1x MMC/SD/SDIO interface
- 2x CAN-FD interface
- 2x I2S Audio, 14x GPIO, UART, SPI, I2C
- SMARC 2.2 Compliant

Technical Data

Technology	Arm
Formfactor	SMARC Short Size
CPU	NXP i.MX 95 Arm Cortex-A55 Applications Processor • 6/4 cores, 1.8 - 2.0 GHz, with ISP, NPU, GPU, VPU, DC, dual-core option* • 6/4 cores, 1.8 - 2.0 GHz, with ISP, NPU, VPU • 6/4 cores, 1.8 - 2.0 GHz, with NPU, GPU, VPU, DC • 6/4 cores, 1.8 - 2.0 GHz, with NPU, dual-core option* • dual-core part available in commercial temperature and 1.0 GHz Arm Cortex-M7 Real Time Processor at 800MHz Arm Cortex-M33 Real Time Processor at 333MHz NXP eIQ Neutron Neural Processing Unit (processor SKU dependent) NXP Image Signal Processor (processor SKU dependent)
Chipset	SOC
RAM	Up to 16GB 6400MT/s LPDDR5 SDRAM, soldered, inline ECC support
Flash	Up to 256GB eMMC Flash
Storage Interfaces	1x MMC/SD/SDIO
USB	1x USB 2.0 Host/Client, 2x USB 2.0 Host, 2x USB 3.0 Host or 1x USB 2.0 Host/Client, 1x USB 3.0 Host (optional)
Serial Interfaces	2x UART with 2-wire hand shake 2x UART w/o hand shake
Bus Interfaces	2x PCI Express x1 Gen. 3 5x I2C up to 400 Kbit/s 2x CAN-FD / CAN 2.0B 2x SPI (with two chip selects)* *SPI1 uses FlexSPI with 1/2 CS depending on NOR Flash; flash like devices only
Display Controller	Arm Mali Graphics Processing Unit (processor SKU dependent) Video Processing Unit up to 4k decode/encode (processor SKU dependent)
Display Interfaces	Dual-channel 18/24 bit LVDS interface, up to 1080p60 Also usable as two single independent LVDS channels, up to 720p60 HDMI interface, up to 3840x2160 @ 30fps (optional) or Single-channel LVDS interface (up to 720p60) and MIPI-DSI Display Interface, 4 lanes, up to 3840x1440p60
Network Interface	2x 10/100/1000BASE-T Ethernet with TSN support 10 Gigabit Ethernet SerDes Interface with TSN support (optional) 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)
Audio Interface	2x I2S Audio
Security Device	Advanced Security, Safety, and Reliability integrated in the SOC Integrated EdgeLock secure enclave to simplify implementation of security critical functions like secure boot, cryptography, trust provisioning, run-time attestation, key management services, provision for secure remote management, secure over-the-air updates (OTA) and dedicated cryptographic engine. 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 (12x GPIO on DV1 only) 64kbit ID EEPROM on I2C bus MIPI CSI-2 camera interface (CSI1, 4-lane) MIPI CSI-2 camera interface (CSI0, 2-lane), mutual exclusive with DSI/HDMI (optional)
Feature Highlights	SMARC 2.2 compliant
Firmware	uboot
OS Support	Linux Board Support Package Android Board Support Package (on request)
Power Requirement	Power Supply +5V +/-5%, 5V Standby Power Consumption 5-6W 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 Heatsink
Carrier	TRIA SM2-MB-EP1 TRIA SM2-MB-EP5

Technical Data for TRIA SM2S-IMX95

Order Reference

Order No.	Description	Reference	Status*
117133	SMARC module based on NXP i.MX 9596, Hexa Core Cortex-A55 processor at 1.8GHz, ISP, NPU, GPU, VPU, 4GB LPDDR5, 16GB eMMC Flash, 2x GbE, 10GbE, PCIe, 2x USB3.0 Host, 2x USB2.0 Host, 1x USB2.0 Host/Device, LVDS0/1, MIPI CSI-2 Camera input (CSI0/1); industrial temperature -40...+85°C (Engineering Sample - get in touch with your sales representative)	MSC SM2S-IMX95-HC9-24N0280I ES2 PCBES	Available now
119686	SMARC module based on NXP i.MX 9596, Hexa Core Cortex-A55 processor at 1.8GHz, ISP, NPU, GPU, VPU, 8GB LPDDR5, 64GB eMMC Flash, 8MB NOR Flash, 2x GbE, 10GbE, PCIe, 2x USB3.0 Host, 2x USB2.0 Host, 1x USB2.0 Host/Device, BT/WLAN, TPM, TCXO, LVDS0/1, HDMI, MIPI CSI-2 Camera input (CSI1); industrial temperature -40...+85°C	MSC SM2S-IMX95-HC9-36106C9I PCBFTX	PV
119684	SMARC module based on NXP i.MX 9596, Hexa Core Cortex-A55 processor at 1.8GHz, ISP, NPU, GPU, VPU, 4GB LPDDR5, 32GB eMMC Flash, 2x GbE, 10GbE, PCIe, 2x USB3.0 Host, 2x USB2.0 Host, 1x USB2.0 Host/Device, LVDS0/1, MIPI CSI-2 Camera input (CSI0/1); industrial temperature -40...+85°C	MSC SM2S-IMX95-HC9-25N0280I PCBFTX	PV
119688	SMARC module based on NXP i.MX 9596, Hexa Core Cortex-A55 processor at 1.8GHz, ISP, NPU, GPU, VPU, 4GB LPDDR5, 32GB eMMC Flash, 2x GbE, no 10GbE, PCIe, 2x USB3.0 Host, 2x USB2.0 Host, 1x USB2.0 Host/Device, DSI0, LVDS1, MIPI CSI-2 Camera input (CSI1); industrial temperature -40...+85°C	MSC SM2S-IMX95-HC9L-25N0A80I PCBFTX	PV
119692	SMARC module based on NXP i.MX 9594, Quad Core Cortex-A55 processor at 1.8GHz, ISP, NPU, GPU, VPU, 2GB LPDDR5, 16GB eMMC Flash, 2x GbE, no 10GbE, PCIe, 2x USB3.0 Host, 2x USB2.0 Host, 1x USB2.0 Host/Device, LVDS0/1, MIPI CSI-2 Camera input (CSI0/1); industrial temperature -40...+85°C	MSC SM2S-IMX95-QC9L-15N0280I PCBFTX	Available Q1/2027
119682	SMARC module based on NXP i.MX 9556, Hexa Core Cortex-A55 processor at 1.8GHz, NPU, GPU, VPU, 4GB LPDDR5, 32GB eMMC Flash, 2x GbE, no 10GbE, PCIe, 1x USB3.0 , 1x USB2.0 Host/Device, LVDS0/1, MIPI CSI-2 Camera input (CSI0/1); industrial temperature -40...+85°C	MSC SM2S-IMX95-HC5L-25N0290I PCBFTX	PV
119690	SMARC module based on NXP i.MX 9554, Quad Core Cortex-A55 processor at 1.8GHz, NPU, GPU, VPU, 2GB LPDDR5, 16GB eMMC Flash, 1x GbE, no 10GbE, no PCIe, 1x USB3.0, 1x USB2.0 Host/Device, LVDS0/1, MIPI CSI-2 Camera input (CSI0/1); extended temperature -25...+85°C	MSC SM2S-IMX95-QC5L-15N0270E PCBFTX	Available Q1/2027
119670	SMARC module based on NXP i.MX 9536, Hexa Core Cortex-A55 processor at 1.8GHz, NPU, 8GB LPDDR5, 32GB eMMC Flash, 2x GbE, no 10GbE, PCIe, 1x USB3.0 Host, 1x USB2.0 Host/Device, no Display, MIPI CSI-2 Camera input (CSI1); extended temperature -25...+85°C	MSC SM2S-IMX95-HC3L-35N0090E PCBFTX	Available Q1/2027

Ordering Information for TRIA SM2S-IMX95

*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

Carrier Options TRIA SM2S-IMX8MLC/IMX95/IMX91/V2L/G2L/IMX93/G2UL/AM62X/IMX8/IMX8M/IMX8PLUS/IMX8MINI/IMX8NANO/IMX6/IMX6ULL

Cooling Options

Order No.	Description	Reference
113153	Passive Heatsink for SM2S-IMX95 module, consisting of a single-piece aluminum pin cooler and thermal pad for contact to the processor, with 2.7mm through-hole standoffs	MSC SM2S-IMX95-01 HSI-001
113154	Heatspreader for SM2S-IMX95 module, consisting of a single-piece aluminum plane and thermal pad for contact to the processor, with 2.7mm through-hole standoffs	MSC SM2S-IMX95-01 HSP-001

Cooling Options TRIA SM2S-IMX95

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 TRIA SM2S-IMX8MLC/IMX95/IMX91/V2L/G2L/IMX93/G2UL/AM62X/IMX8/IMX8PLUS

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/IMX93/IMX91 module. Please order your choice of module separately.	MSC SM2-SK-IMX9-EP1-KIT001 BRDFTX

Starter Kits TRIA SM2S-IMX95/IMX91/IMX93

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