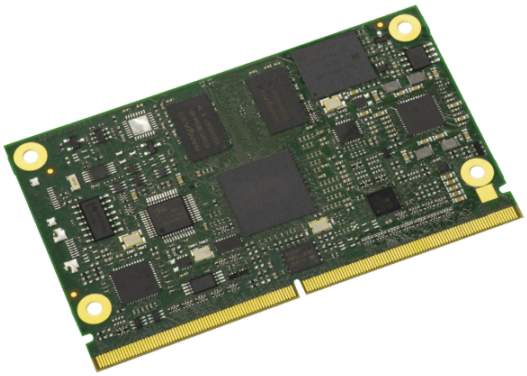
TRIA SM2S-IMX8NANO

NXP® i.MX 8M Nano Arm® Cortex®-A53



82 x 50 mm

2-4 W

-40 +85 °C

Highlights

- Single, Dual or Quad core Arm Cortex-A53 Applications Processor up to 1.5GHz
- Arm Cortex-M7 Real Time Processor up to 750MHz
- Vivante multimedia 2D/3D Graphics Processor
- Up to 2GB DDR4 SDRAM at 2400 MT/s
- Up to 64GB eMMC Flash
- Dual-channel LVDS / MIPI-DSI x4 (optional)
- MIPI CSI-2 Camera Interface
- 4x USB 2.0 Host interface or
- 1x USB 2.0 Host/Device interface (optional)
- 1x Gigabit Ethernet
- 1x MMC/SD/SDIO interface
- 1x I2S Audio Interface
- 14x GPIO
- UART, SPI, I2C
- SMARC 2.1 Compliant

Technical Data

Technology	ARM
Formfactor	SMARC Short Size
CPU	NXP i.MX 8M Nano Arm Cortex-A53 Applications Processor • i.MX 8M Nano Solo, single-core, 1.4 - 1.5GHz • i.MX 8M Nano Dual, dual-core, 1.4 - 1.5GHz • i.MX 8M Nano Quad, quad-core, 1.4 - 1.5GHz • i.MX 8M Nano SoloLite, single-core, 1.4 - 1.5GHz • i.MX 8M Nano DualLite, dual-core, 1.4 - 1.5GHz • i.MX 8M Nano QuadLite, quad-core, 1.4 - 1.5GHz Arm Cortex-M7 Real Time Processor at 750MHz
Chipset	SOC
RAM	Up to 2GB 2400MT/s DDR4 SDRAM, soldered, no ECC
Flash	Up to 64GB eMMC Flash QSPI NOR Flash (optional)
Storage Interfaces	1x MMC/SD/SDIO
USB	4x USB 2.0 Host or 1x USB 2.0 Host/Client (optional)
Serial Interfaces	2x UART with 2-wire hand shake 2x UART w/o hand shake
Bus Interfaces	4x I2C up to 400 Kbit/s 2x SPI (with two chip selects)
Display Controller	Vivante GC7000UL 3D Graphics Processing Unit (GPU) 3D Graphics Acceleration, 2 shaders, 16GFLOPS OpenGL ES 1.0, 2.0, 3.0, 3.1, OpenCL 1.2 and Vulkan support Video Processing Unit not available
Display Interfaces	Dual-channel LVDS interface, 18 or 24 bit (up to 1920x1080); also usable as one single-channel LVDS interface (up to 1366x768) or MIPI-DSI Display Interface, 4 lanes, up to 1920x1080 @ 60fps (optional)
Network Interface	1x 10/100/1000BASE-T Ethernet
Audio Interface	1x I2S Audio
Security Device	Advanced Security, Safety, and Reliability integrated in the SOC Trusted Platform Module (TPM) 2.0 (optional)
Miscellaneous	Watchdog Timer for system reset (programmable, 1s ... 600s) High accuracy RTC 14x GPIO, configurable as input or output 64kbit ID EEPROM on I2C bus MIPI CSI-2 camera interface (CSI0, 2 lane) or MIPI CSI-2 camera interface (CSI1, 4-lane)
Feature Highlights	SMARC 2.1 compatible
OS Support	Linux Board Support Package Android Board Support Package (on request)
Power Requirement	Power Supply +5V +/-5% Power Consumption 2-4 W typ. (depending on CPU and optional features)

Environment	Temperature Range: 0°C ... +70°C operating commercial -40°C ... +85°C operating extended -40°C ... +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 SM2S-MB-EP5

Technical Data for TRIA SM2S-IMX8NANO

Order Reference

Order No.	Description	Reference	Status*
83683	SMARC module based on NXP i.MX 8M Nano Quad, Quad-Core Cortex-A53 processor at 1.5GHz, 2GB DDR4, 16GB eMMC Flash, 8MB QSPI NOR Flash, 1x GbE LAN, 4x USB2.0 Host, TPM, LVDS, MIPI CSI-2 Camera input (CSI1); commercial temperature 0...+70°C	MSC SM2S-IMX8NANO-QC-14N0201C PCBFTX	PV
83681	SMARC module based on NXP i.MX 8M Nano Quad, Quad-Core Cortex-A53 processor at 1.4GHz, 2GB DDR4, 8GB eMMC Flash, 1x GbE LAN, 4x USB2.0 Host, LVDS, MIPI CSI-2 Camera input (CSI0); industrial temperature -40...+85°C	MSC SM2S-IMX8NANO-QC-13N0220I PCBFTX	PV
85093	SMARC module based on NXP i.MX 8M Nano Quad, Quad-Core Cortex-A53 processor at 1.4GHz, 1GB DDR4, 8GB eMMC Flash, 1x GbE LAN, 4x USB2.0 Host, LVDS, MIPI CSI-2 Camera input (CSI0); industrial temperature -40...+85°C	MSC SM2S-IMX8NANO-QC-03N0220I PCBFTX	PV
83669	SMARC module based on NXP i.MX 8M Nano Dual, Dual-Core Cortex-A53 processor at 1.4GHz, 1GB DDR4, 8GB eMMC Flash, 1x GbE LAN, 4x USB2.0 Host, LVDS, MIPI CSI-2 Camera input (CSI0); industrial temperature -40...+85°C	MSC SM2S-IMX8NANO-DC-03N0220I PCBFTX	PV
87637	SMARC module based on NXP i.MX 8M Nano Dual, Dual-Core Cortex-A53 processor at 1.4GHz, 1GB DDR4, 8GB eMMC Flash, 1x GbE LAN, 4x USB2.0 Host, MIPI-DSI, MIPI CSI-2 Camera input (CSI0); industrial temperature -40...+85°C	MSC SM2S-IMX8NANO-DC-03N0820I PCBFTX	PV
87635	SMARC module based on NXP i.MX 8M Nano Dual, Dual-Core Cortex-A53 processor at 1.4GHz, 1GB DDR4, 4GB eMMC Flash, 1x GbE LAN, 1x USB2.0 Host/Device, LVDS, MIPI CSI-2 Camera input (CSI0); extended temperature -25...+85°C	MSC SM2S-IMX8NANO-DC-02N0230E PCBFTX	PV
83685	SMARC module based on NXP i.MX 8M Nano Solo, Single-Core Cortex-A53 processor at 1.4GHz, 512MB DDR4, 4GB eMMC Flash, 1x GbE LAN, 1x USB2.0 Host/Device, MIPI DSI, MIPI CSI-2 Camera input (CSI0); extended temperature -25...+85°C	MSC SM2S-IMX8NANO-SC-92N0830E PCBFTX	PV
92716	SMARC module based on NXP i.MX 8M Nano Solo, Single-Core Cortex-A53 processor at 1.4GHz, 1GB DDR4, 4GB eMMC Flash, 1x GbE LAN, 1x USB2.0 Host/Device, MIPI DSI, MIPI CSI-2 Camera input (CSI0); extended temperature -25...+85°C	MSC SM2S-IMX8NANO-SC-02N0830E PCBFTX	PV

Ordering Information for TRIA SM2S-IMX8NANO

*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

Cooling Options

Order No.	Description	Reference
83732	Heatspreader for SM2S-IMX8NANO and SM2S-IMX8MLC module, consisting of a single-piece aluminum plane and thermal pad for contact to the processor, with 2.7mm through-hole standoffs	MSC SM2S-IMX8NANO-01 HSP-001

Cooling Options TRIA SM2S-IMX8MLC/IMX8NANO

Other Accessories

Order No.	Description	Reference
40402	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 TRIA SM2S-ZUSP/IMX8M/IMX8MINI/IMX8NANO/IMX6

Starter Kits

Order No.	Description	Reference
74008	Starter Kit for TRIA SMARC i.MX 8 Series 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-IMX8 / 8M / 8MINI / 8NANO / 8PLUS module. Please order your choice of module separately.	MSC SM2-SK-IMX8-EP1-KIT001 SETPAC

Starter Kits TRIA SM2S-IMX8MLC/IMX8/IMX8M/IMX8PLUS/IMX8MINI/IMX8NANO

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