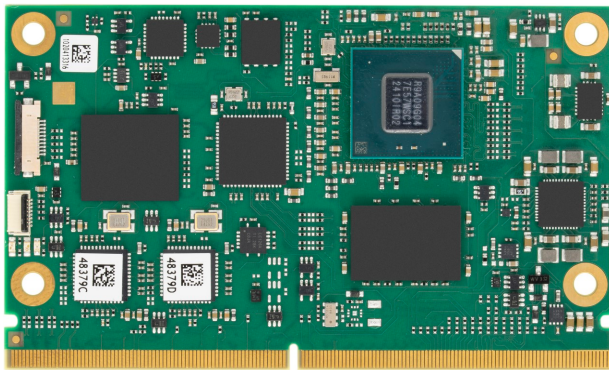


TRIA SM2S-G3E

Renesas RZ/G3E Arm® Cortex®-A55/M33

82 x 50 mm



3-5 W (est.)

-40 +85 °C



Highlights

- Quad/Dual Core Arm Cortex-A55 up to 1.8GHz
- Arm Cortex-M33 Real Time Processor up to 200MHz
- Arm Ethos™-U55 Neural Processing Unit (NPU) up to 0.5TOPS
- Arm Mali™-G52 Graphics Processing Unit (GPU) up to 30GFLOPS
- Video Processing Unit up to 4k decode/encode
- Up to 8GB LPDDR4 SDRAM with inline ECC
- Up to 256GB eMMC Flash
- Dual independent Display support
- Dual-channel LVDS, MIPI-DSI, HDMI interface
- MIPI CSI-2 Camera interface
- 1x PCI Express x2/x1 Gen 3
- 2x USB 3.2 Host interface
- 3x USB 2.0 Host interface
- 1x USB 2.0 Host/Device interface
- 2x Gigabit Ethernet
- 1x MMC/SD/SDIO interface
- 2x CAN-FD Interface
- 2x I2S Audio Interface
- 14x GPIO
- UART, SPI, I2C

- SMARC 2.2 Compliant

Technical Data

Technology	Arm
Formfactor	SMARC™ Short Size
CPU	Renesas RZ/G3E processor family - Dual Core Arm Cortex-A55 at 1.8GHz, with NPU, secure - Dual Core Arm Cortex-A55 at 1.8GHz, no NPU, secure - Quad Core Arm Cortex-A55 at 1.8GHz, with NPU, secure - Quad Core Arm Cortex-A55 at 1.1GHz, non NPU, secure Arm Cortex-M33 Real Time Processor at 200MHz Arm Ethos U-55 Neural Processing Unit (NPU) up to 0.5TOPS
Chipset	SOC
RAM	Up to 8GB 3200MT/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, 3x USB 2.0 Host, 2x USB 3.2 Gen 1 Host or 1x USB 2.0 Host/Client, 1x USB 2.0 Host, 1x USB 3.2 Gen 2 x 1 Host (optional)
Serial Interfaces	2x UART with Tx/D, Rx/D, RTS, CTS 2x UART with Tx/D, Rx/D only
Bus Interfaces	1x PCI Express x2/x1 Gen 3 5x I2C up to 400 Kbit/s 2x CAN-FD / CAN 2.0B 2x SPI (with two chip selects)
Display Controller	Arm Mali-G52 Graphics Processing Unit (GPU) Multicore 3D Graphics Acceleration, up to 30 GFLOPS OpenGL ES 3.2, OpenCL 2.0 and Vulkan 1.2 support Video Processing Unit (VPU) with hardware support for H.265 decode/encode up to 4k H.264 decode/encode up to 1080p
Display Interfaces	Dual independent Display support; three different configuration options: - Option 1: Dual-channel LVDS interface, 18 or 24 bit (up to 1920x1200 @ 60fps); also usable as two single-channel LVDS interfaces (up to 1366x768 @ 60fps) - Option 2: Dual-channel LVDS interface, 18 or 24 bit (up to 1920x1200 @ 60fps); also usable as one single-channel LVDS interface (up to 1366x768 @ 60fps) - Option 3: Single-channel LVDS interface (up to 1366x768 @ 60fps) HDMI 2.0b interface, up to 1920x1200 @ 60fps MIPI-DSI Display Interface, 4 lanes, up to 1920x1200 @ 60fps
Network Interface	2x 10/100/1000BASE-T Ethernet, TSN/IEEE1588 support
Audio Interface	2x 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) RTC / temperature compensated (optional) 14x GPIO, configurable as input or output, interrupt capable 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 2.2 compatible
Firmware	uboot
OS Support	Linux Board Support Package Android Board Support Package (on request)
Power Requirement	Power Main: +5V +/-5% Power Standby: +5V +/-5% Power Consumption 3-5 W typ. (depending on CPU and optional features)
Environment	Temperature Range: Commercial: 0°C ... 70°C (operating) -20°C ... 85°C (storage) Extended: -25°C ... 85°C (operating) -40°C ... 85°C (storage) Industrial: -40°C ... 85°C (operating) -40°C ... 85°C (storage) Humidity: 5 ... 95% (operating, non-condensing) 5 ... 95% (storage, non-condensing)
Dimensions	82 x 50 mm
Cooling	Heatspreader Heatsink
Carrier	TRIA SM2-MB-EP1 TRIA SM2S-MB-EP5

Technical Data for TRIA SM2S-G3E

Order Reference

Order No.	Description	Reference	Status*
115688	SMARC module based on Renesas RZ/G3E Quad-Core Cortex-A55 processor at 1.8GHz, NPU, 8GB LPDDR4, 32GB eMMC Flash, 2x GbE LAN, PCIe, 2x USB3.0 Host, 3x USB2.0 Host, 1x USB2.0 Host/Device, 2x CAN, SDIO, BT/WLAN, TPM, LVDS, HDMI, MIPI CSI-2 Camera input (CSI1, 4 lane); industrial temperature -40...+85°C (Engineering Sample - get in touch with your sales representative)	MSC SM2S-G3E-QC-35N06C1I ES1 PCBES	OR
115687	SMARC module based on Renesas RZ/G3E Quad-Core Cortex-A55 processor at 1.8GHz, NPU, 4GB LPDDR4, 16GB eMMC Flash, 2x GbE LAN, PCIe, 2x USB3.0 Host, 3x USB2.0 Host, 1x USB2.0 Host/Device, 2x CAN, SDIO, LVDS, MIPI CSI-2 Camera input (CSI0, 2 lane); industrial temperature -40...+85°C (Engineering Sample - get in touch with your sales representative)	MSC SM2S-G3E-QC-24N02A0I ES1 PCBES	OR
115686	SMARC module based on Renesas RZ/G3E Quad-Core Cortex-A55 processor at 1.8GHz, NPU, 2GB LPDDR4, 8GB eMMC Flash, 1x GbE LAN, PCIe, 1x USB3.0 Host, 1x USB2.0 Host, 1x USB2.0 Host/Device, 2x CAN, SDIO, LVDS, DSI, MIPI CSI-2 Camera input (CSI0, 2 lane); extended temperature -25...+85°C (Engineering Sample - get in touch with your sales representative)	MSC SM2S-G3E-QC-13N0A70E ES1 PCBES	OR

Ordering Information for TRIA SM2S-G3E

*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, I ² C, 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
115757	Heatspreader for SM2S-G3E module, consisting of a single-piece aluminum plane and thermal pad for contact to the processor, with 2.7mm through-hole standoffs	MSC SM2S-G3E-01 HSP-001
115756	Passive Heatsink for SM2S-G3E 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-G3E-01 HSI-001
115755	Passive Heatsink for SM2S-G3E module, consisting of a single-piece aluminum pin cooler and thermal pad for contact to the processor, with 2.7mm through-hole standoffs (Engineering Sample - get in touch with your sales representative)	MSC SM2S-G3E-01 HSI-001 ES

Cooling Options TRIA SM2S-G3E

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
118431	Starter Kit for SMARC modules based on Renesas RZ/G and RZ/V microprocessors. Includes MSC SM2-MB-EP1 Baseboard, Heatspreader/Heatsink, SD Card with USB Card Reader, Power Supply and suitable cable kit. The StarterKit does not include the SM2S-G3E / G2L / G2UL / V2L module. Please order your choice of module separately.	MSC SM2-SK-RZG-EP1-KIT001 BRDFTX

Starter Kits TRIA SM2S-G3E/G2L/G2UL/V2L

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