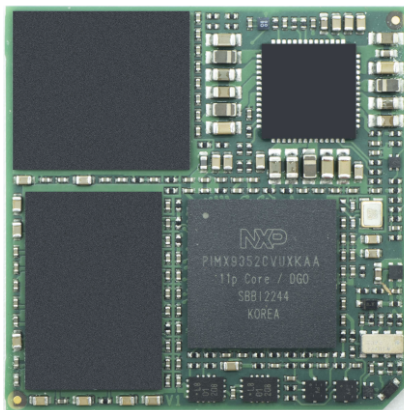


TRIA OSM-SF-IMX93

NXP™ i.MX 93 ARM® Cortex™-A55 / M33

30 x 30 mm



500mW - 2W

-40 +85



Highlights

- Single or Dual core ARM Cortex-A55 Applications Processors up to 1.7GHz
- ARM Cortex-M33 Real Time Processor at 250MHz
- ARM Ethos™-U65 microNPU with 256 MACs/Cycle
- Pixel processing pipeline (PXP) engine
- Up to 2GB LPDDR4 SDRAM with inline ECC
- Up to 256GB eMMC Flash
- MIPI-DSI x4, Single-channel LVDS (opt. on RGB)
- MIPI CSI-2 Camera Interface
- 2x USB 2.0 Host/Device interface
- 2x Gigabit Ethernet (RGMII)
- 2x SD/SDIO interfaces
- 2x CAN-FD interfaces
- 2x ADC inputs (12-bit)
- Optimized design for low power applications
- OSM 1.1 (SF) Compliant, 322 Pin, RM 1,25 mm

Technical Data

Technology	ARM
Formfactor	OSM-SF, 332 Contacts, RM 1,25 mm
CPU	NXP i.MX 93 ARM Cortex-A55 Applications Processors • i.MX 9352, dual-core, NPU, 1.7GHz • i.MX 9332, dual-core, 1.7GHz • i.MX 9351, single-core, NPU, 1.7GHz • i.MX 9331, single-core, 1.7GHz • i.MX 9302, dual-core, 900 MHz • i.MX 9301, single-core, 900 MHz ARM Cortex-M33 Real Time Processor at 250MHz ARM Ethos-U65 microNPU with 256 MACs/Cycle
Chipset	SOC
RAM	Up to 2GB 3700MT/s LPDDR4 SDRAM, soldered, inline ECC support
Flash	Up to 256GB eMMC Flash
Storage Interfaces	2x MMC/SD/SDIO
USB	2x USB 2.0 Host/Device
Serial Interfaces	1x UART Console with Rx, Tx only 1x UART with 2-wire hand shake 2x UART w/o hand shake
Bus Interfaces	2x I2C up to 400 Kbit/s 2x SPI (with two chip selects) 2x CAN-FD /CAN 2.0B
Display Controller	Pixel processing pipeline (PXP) engine to support 2D image processing (i.e. Blending/Composition, Rotation, Resize, Color Space Conversion) no 3D Graphics Processing Unit (GPU) no Video Processing Unit (VPU)
Display Interfaces	MIPI-DSI Display Interface, 4 lanes, up to 1920x1080 @ 60fps Single-channel LVDS interface, 18 or 24 bit, up to 1366x768 @ 60fps (opt. on RGB Pins)
Network Interface	2x Ethernet, (RGMII interface)
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
Miscellaneous	Watchdog Timer for system reset (programmable, 1s ... 600s) RTC 20x GPIO, configurable as input or output, interrupt capable 2x PWM 2x ADC inputs (12-bit) MIPI CSI-2 camera interface (2 lane)
Feature Highlights	OSM, Size-S compatible
Firmware	uboot
OS Support	Linux Board Support Package Android Board Support Package (on request)

Power Requirement	Power Supply +5V +/-5% Power Consumption 500mW-2W typ.
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	30 x 30 mm
Certificates	UL / CE
Carrier	TRIA SM2F-OSM-AD-001

Technical Data for TRIA OSM-MF-IMX93

Order Reference

Order No.	Description	Reference	Status*
111852	OSM 1.1 module based on NXP i.MX 9352, Dual Core Cortex-A55 processor at 1.7GHz, NPU, 2GB LPDDR4, 16GB eMMC Flash, 2x GbE (RGMII), 2x USB2.0 Host/Device, 20x GPIO, MIPI-DSI, LVDS (on RGB interface), MIPI CSI-2 Camera input, 2x CAN-FD, industrial temperature -40...+85°C	MSC OSM-SF-IMX93-DC-14N0A00I PCBFTX	PV
111801	OSM 1.1 module based on NXP i.MX 9352, Dual Core Cortex-A55 processor at 1.7GHz, NPU, 1GB LPDDR4, 8GB eMMC Flash, 2x GbE (RGMII), 2x USB2.0 Host/Device, 20x GPIO, MIPI-DSI, LVDS (on RGB interface), MIPI CSI-2 Camera input, 2x CAN-FD, industrial temperature -40...+85°C	MSC OSM-SF-IMX93-DC-03N0A00I PCBFTX	PV
111853	OSM 1.1 module based on NXP i.MX 9332, Dual Core Cortex-A55 processor at 1.7GHz, no NPU, 1GB LPDDR4, 8GB eMMC Flash, 2x GbE (RGMII), 2x USB2.0 Host/Device, 20x GPIO, MIPI-DSI, LVDS (on RGB interface), MIPI CSI-2 Camera input, 2x CAN-FD, extended temperature -25...+85°C	MSC OSM-SF-IMX93-DCL-03N0A00E PCBFTX	PV
111854	OSM 1.1 module based on NXP i.MX 9331, Single Core Cortex-A55 processor at 1.7GHz, no NPU, 512MB LPDDR4, 4GB eMMC Flash, 2x GbE (RGMII), 2x USB2.0 Host/Device, 20x GPIO, MIPI-DSI, LVDS (on RGB interface), MIPI CSI-2 Camera input, 2x CAN-FD, extended temperature -25...+85°C	MSC OSM-SF-IMX93-SCL-92N0A00E PCBFTX	PV
116920	OSM 1.1 module based on NXP i.MX 9352, Dual Core Cortex-A55 processor at 1.7GHz, NPU, 2GB LPDDR4, 64GB eMMC Flash (20GB in SLC Mode), 2x GbE (RGMII), 2x USB2.0 Host/Device, 20x GPIO, MIPI-DSI, LVDS (on RGB interface), MIPI CSI-2 Camera input, 2x CAN-FD, extended temperature -25...+85°C	MSC OSM-SF-IMX93-DC-16N2A00E PCBFTX	PV
117956	OSM 1.1 module based on NXP i.MX 9332, Dual Core Cortex-A55 processor at 1.7GHz, no NPU, 2GB LPDDR4, 4GB eMMC Flash, 2x GbE (RGMII), 2x USB2.0 Host/Device, 20x GPIO, MIPI-DSI, LVDS (on RGB interface), MIPI CSI-2 Camera input, 2x CAN-FD, extended temperature -25...+85°C	MSC OSM-SF-IMX93-DCL-12N0A00E PCBFTX	PV
116367	OSM 1.1 module based on NXP i.MX 9352, Dual Core Cortex-A55 processor at 1.7GHz, NPU, 2GB LPDDR4, 16GB eMMC Flash, 2x GbE (RGMII), 2x USB2.0 Host/Device, 20x GPIO, MIPI-DSI, LVDS (on RGB interface), MIPI CSI-2 Camera input, 2x CAN-FD, industrial temperature -40...+85°C, Tape&Reel packaging, PU: 240 pcs.	MSC OSM-SF-IMX93-DC-14N0A00I-RN PCBFTX	OR
116366	OSM 1.1 module based on NXP i.MX 9352, Dual Core Cortex-A55 processor at 1.7GHz, NPU, 1GB LPDDR4, 8GB eMMC Flash, 2x GbE (RGMII), 2x USB2.0 Host/Device, 20x GPIO, MIPI-DSI, LVDS (on RGB interface), MIPI CSI-2 Camera input, 2x CAN-FD, industrial temperature -40...+85°C, Tape&Reel packaging, PU: 240 pcs.	MSC OSM-SF-IMX93-DC-03N0A00I-RN PCBFTX	OR
116368	OSM 1.1 module based on NXP i.MX 9332, Dual Core Cortex-A55 processor at 1.7GHz, no NPU, 1GB LPDDR4, 8GB eMMC Flash, 2x GbE (RGMII), 2x USB2.0 Host/Device, 20x GPIO, MIPI-DSI, LVDS (on RGB interface), MIPI CSI-2 Camera input, 2x CAN-FD, extended temperature -25...+85°C, Tape&Reel packaging, PU: 240 pcs.	MSC OSM-SF-IMX93-DCL-03N0A00E-RN PCBFTX	OR

Order No.	Description	Reference	Status*
116369	OSM 1.1 module based on NXP i.MX 9331, Single Core Cortex-A55 processor at 1.7GHz, no NPU, 512MB LPDDR4, 4GB eMMC Flash, 2x GbE (RGMII), 2x USB2.0 Host/Device, 20x GPIO, MIPI-DSI, LVDS (on RGB interface), MIPI CSI-2 Camera input, 2x CAN-FD, extended temperature -25...+85°C, Tape&Reel packaging, PU: 240 pcs.	MSC OSM-SF-IMX93-SCL-92N0A00E-RN PCBFTX	OR
116972	OSM 1.1 module based on NXP i.MX 9352, Dual Core Cortex-A55 processor at 1.7GHz, NPU, 2GB LPDDR4, 64GB eMMC Flash (20GB in SLC Mode), 2x GbE (RGMII), 2x USB2.0 Host/Device, 20x GPIO, MIPI-DSI, LVDS (on RGB interface), MIPI CSI-2 Camera input, 2x CAN-FD, extended temperature -25...+85°C, Tape&Reel packaging, PU: 240 pcs.	MSC OSM-SF-IMX93-DC-16N2A00E-RN PCBFTX	OR
117957	OSM 1.1 module based on NXP i.MX 9332, Dual Core Cortex-A55 processor at 1.7GHz, no NPU, 2GB LPDDR4, 4GB eMMC Flash, 2x GbE (RGMII), 2x USB2.0 Host/Device, 20x GPIO, MIPI-DSI, LVDS (on RGB interface), MIPI CSI-2 Camera input, 2x CAN-FD, extended temperature -25...+85°C, Tape&Reel packaging, PU: 240 pcs.	MSC OSM-SF-IMX93-DCL-12N0A00E-RN PCBFTX	OR
120370	OSM 1.1 module based on NXP i.MX 9332, Dual Core Cortex-A55 processor at 1.7GHz, no NPU, 2GB LPDDR4, 8GB eMMC Flash, 2x GbE (RGMII), 2x USB2.0 Host/Device, 20x GPIO, MIPI-DSI, LVDS (on RGB interface), MIPI CSI-2 Camera input, 2x CAN-FD, extended temperature -25...+85°C	MSC OSM-SF-IMX93-DCL-13N0A00E PCBFTX	PV
120371	OSM 1.1 module based on NXP i.MX 9332, Dual Core Cortex-A55 processor at 1.7GHz, no NPU, 2GB LPDDR4, 8GB eMMC Flash, 2x GbE (RGMII), 2x USB2.0 Host/Device, 20x GPIO, MIPI-DSI, LVDS (on RGB interface), MIPI CSI-2 Camera input, 2x CAN-FD, extended temperature -25...+85°C, Tape&Reel packaging, PU: 240 pcs.	MSC OSM-SF-IMX93-DCL-13N0A00E-RN PCBFTX	OR

Ordering Information for TRIA OSM-SF-IMX93

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

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