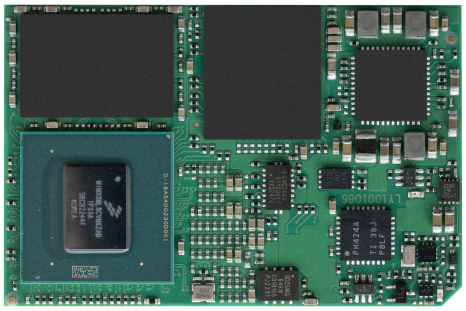
MSC OSM-MF-IMX8PLUS

NXP® i.MX 8M Plus Arm® Cortex®-A53



30 x 45 mm	
2-6 W	
-40 +85	

OPEN STANDARD MODULE™

NXP

Description

The MSC OSM-MF-IMX8PLUS is based on the new OSM 1.1 standard (Size-M) "Medium" for completely machine processible low-cost embedded computer modules during soldering, assembly and testing.

Highly scalable and equipped with i.MX 8M Plus Application Processors, manufactured by NXP using 14nm FinFET process technology. The module offers dual- or quad-core ARM Cortex-A53 processors in combination with the ARM Cortex-M7 real-time processor, GC 7000UL multimedia 2D/

3D GPU and a Machine Learning Accelerator (2.3 TOPS). The thermal design power (TDP) ranges from 2 W to 6 W.

MSC OSM-MF-IMX8PLUS provides fast and low power LPDDR4 memory with inline ECC, combined with up to 256GB eMMC Flash memory. Various interfaces for embedded applications such as 2x Gigabit Ethernet (RGMII) with IEEE 1588 support and one of them with TSN support , USB 2.0, USB 3.0, 1x PCIe x1 Gen.3, the Image Signal Processor supports 1x MIPI-CSI (4-lane), as well as an extensive set of interfaces for embedded applications.

The module is compliant with the new OSM 1.1 standard (OSM-MF). For evaluation and design-in of the new OSM-MF-IMX8PLUS module, Avnet Embedded provides a development platform and a starter kit. A Yocto based Linux Board Support Package is available (Android 12 and Windows 10 IoT Enterprise support on request).

Highlights

- Dual or Quad core ARM Cortex-A53 Applications Processor up to 1.8GHz
- ARM Cortex-M7 Real Time Processor at 800MHz
- GC7000UL 2D/3D Graphics Processor with OpenCL and Vulkan support
- 1080p60 H.265 decode, 1080p60 H.264 encode
- (VPU not available on ”Plus Quad Lite“)
- Machine Learning Accelerator (2.3 TOPS)
- (NPU not available on ”Plus Quad Lite“)
- Hifi4 Audio DSP, operating up to 800MHz
- Image Sensor Processor (ISP) supports 12MP@30fps, 4kp45
- Up to 8GB LPDDR4 SDRAM with inline ECC support
- Up to 256GB eMMC 5.1 Flash
- MIPI-DSI x4, single channel LVDS (on RGB)
- MIPI CSI-2 (4-lane) Camera Interface
- 1x USB 2.0 Host/Device interface
- 1x USB 3.0 Host/Device interface
- 2x Ethernet (RGMII), IEEE 1588, 1x with TSN
- 2x MMC/SD/SDIO interface
- 2x I2S Audio Interface
- 2x CAN-FD interface
- 20x GPIO, 4x PWM
- 4x UART, 3x SPI, 2x I2C
- 1x PCIe x1 Gen.3
- OSM-MF Compliant, 476 Pin, RM 1,25 mm

Technical Data - MSC OSM-MF-IMX8PLUS

Technology	ARM
Formfactor	OSM-MF, 476 Pin, RM 1,25 mm
CPU	NXP i.MX 8M Plus ARM Cortex-A53 Applications Processor - i.MX 8M Plus Quad with NPU, ISP, VPU, HIFI4, CAN, 1.8GHz, Consumer - i.MX 8M Plus Quad with ISP, VPU, CAN, 1.8GHz, Consumer - i.MX 8M Plus QuadLite with CAN, 1.8GHz, Consumer - i.MX 8M Plus Dual, with NPU, ISP, VPU, HIFI4, CAN, 1.8GHz, Consumer - i.MX 8M Plus Quad with NPU, ISP, VPU, HIFI4, CAN-FD, 1.6GHz, Industrial - i.MX 8M Plus Quad with ISP, VPU, CAN-FD, 1.6GHz, Industrial - i.MX 8M Plus QuadLite with CAN-FD, 1.6GHz, Industrial - i.MX 8M Plus Dual, with NPU, ISP, VPU, HIFI4, CAN-FD, 1.6GHz, Industrial ARM Cortex-M7 Real Time Processor at 800MHz
Chipset	SOC
RAM	Up to 8GB 4000MT/s LPDDR4 SDRAM, soldered
Flash	Up to 256GB eMMC 5.1 Flash QSPI NOR Flash 64MB (optional)
Storage Interfaces	2x MMC/SD/SDIO
USB	1x USB 2.0 Host/Client, 1x USB 3.0 Host/Client
Serial Interfaces	1x UART Console with Rx, Tx only 2x UART with 2-wire hand shake 1x UART w/o hand shake
Bus Interfaces	1x PCI Express x1 Gen.3 lane 2x I2C up to 400 Kbit/s 3x SPI (with two chip selects)
Display Controller	Vivante GC7000UL 2D/3D Graphics Processing Unit (GPU) 3D Graphics Acceleration, 2 shader, 16 GFLOPs OpenGL ES 1.1, 2.0, 3.0, OpenCL 1.2, Vulkan Video Processing Unit (not available on ”Plus Quad Lite“) with hardware support for 1080p60 HEVC H.265, VP9, H.264, VP8 decode 1080p60 H.264, VP8 encode
Display Interfaces	MIPI-DSI Display Interface, 4 lanes, up to 1920x1080 @ 60fps single channel LVDS (on RGB interface) HDMI (on eDP interface)
Network Interface	2x Ethernet (RGMII interface) IEEE 1588, 1x with TSN
Audio Interface	2x I2S Audio
Security Device	Advanced Security, Safety, and Reliability integrated in the SOC

Miscellaneous	Watchdog Timer for system reset (programmable, 1s … 600s) Temperature compensated RTC 30x GPIO, configurable as input or output 4x PWM MIPI CSI-2 camera interface (4 lane)
Feature Highlights	OSM, Size-M compatible
OS Support	Linux Board Support Package Android 12 and Windows 10 IoT Enterprise support on request
Power Requirement	Power Supply +5V +/-5% Power Consumption 2-6 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	30 x 45 mm
Certificates	UL /CE
Carrier	MSC SM2F-OSM-AD-001

Order Reference - MSC OSM-MF-IMX8PLUS

Order Number	Description	Reference	Cat*
111996	OSM 1.1 module based on NXP i.MX 8M Plus Quad (with VPU, NPU, ISP), Quad-Core Cortex-A53 processor at 1.6GHz, 4GB LPDDR4, 16GB eMMC Flash, 8MB QSPI Flash, 2x GbE (RGMII), 1x USB2.0 Host/Device, 1x USB3.0 Host/Device, MIPI-DSI, LVDS (on RGB interface), MIPI CSI-2 Camera input, 2x CAN-FD, industrial temperature -40...+85°C	MSC OSM-MF-IMX8PLUS-QC-24N0A10IES PCBES	OR
111995	OSM 1.1 module based on NXP i.MX 8M Plus Quad Lite, Quad-Core Cortex-A53 processor at 1.6GHz, 1GB LPDDR4, 4GB eMMC Flash, 2x GbE (RGMII), 1x USB2.0 Host/device, 1x USB3.0 Host/Device, MIPI-DSI, LVDS (on RGB interface), MIPI CSI-2 Camera input, 2x CAN-FD, industrial temperature -40...+85°C	MSC OSM-MF-IMX8PLUS-QCL-02N0A00IE PCBES	OR
112019	OSM 1.1 module based on NXP i.MX 8M Plus Quad (with VPU, NPU, ISP), Quad-Core Cortex-A53 processor at 1.6GHz, 4GB LPDDR4, 16GB eMMC Flash, 8MB QSPI Flash, soldered on SM2F-OSM-AD-001	MSC SM2F-OSM-AD-8PD4G160-001ES2 PCBES	PV
112020	OSM 1.1 module based on NXP i.MX 8M Plus Lite, Quad-Core Cortex-A53 processor at 1.6GHz, 1GB LPDDR4, 4GB eMMC Flash, soldered on SM2F-OSM-AD-001	MSC SM2F-OSM-AD-8PD1G040-001ES2 PCBES	OR

*COM products are divided in two categories, „PV“ (preferred variant) and „OR“ (on request).

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