



## MSC Q7-IMX6PLUS

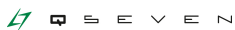
NXP<sup>®</sup> i.MX6 Arm<sup>®</sup>  
Cortex<sup>®</sup>-A9



 70x70 mm

 4-6 W

 -40 +85





## Description

The design of the MSC Q7-IMX6PLUS module was optimized to provide an especially economic platform for NXP's i.MX6 and i.MX6Plus CPUs offering quad-core, dual-core and single-core Arm Cortex-A9 compute performance at very low power consumption and excellent graphics performance combined with a high degree of functional integration.

The MSC Q7-IMX6PLUS CPU Module provides a choice of computing performance ranging from economic single-core to high-performance quad-core power in combination with a high graphics performance and low power consumption available over a wide temperature range.

It incorporates the i.MX 6 (Solo, DualLite, Dual or Quad) or the i.MX 6DualPlus or 6QuadPlus processor with up to 1.2 GHz, up to 4GB DDR3 DRAM and up to 64GB eMMC Flash memory as well as an extensive set of interface controllers. The module provides the new Qseven Rev. 2.0 interface, allowing easy integration with Qseven baseboards.

For evaluation and design-in of the Q7-IMX6PLUS modules, Avnet Embedded provides a development platform, target platform and a starter kit. The MSC Q7-IMX6PLUS module is supported by Linux.

## Highlights

- NXP i.MX 6 Arm Cortex-A9 Solo, DualLite, Dual, Quad, DualPlus and QuadPlus processor
- MPEG-4 Video Encoding/Decoding 1080p
- HDMI graphics 1920 x 1080 x 30fps
- Dual-channel LVDS 1920 x 1080 x 30fps
- Up to 4GB DDR3L SDRAM
- Up to 64GB eMMC Flash
- Gigabit Ethernet Interface
- 1x PCI Express x1
- 1x SATA-II (3Gbps, quad-/dual-core only)
- 1x USB Device/Host + up to 4x USB 2.0
- 1x MMC/SD/SDIO Interface
- CAN Interface
- I2S Audio Interface
- MIPI CSI-2 Camera Interface (optional)
- Micro SD Card Socket

## Technical Data - MSC Q7-IMX6PLUS

<b>Technology</b>	Arm
<b>Formfactor</b>	Qseven 2.0
<b>CPU</b>	NXP i.MX 6 Arm Cortex-A9: - i.MX 6QuadPlus, quad-core, 800MHz...1.2GHz - i.MX 6Quad, quad-core, 800MHz...1.2GHz - i.MX 6DualPlus, dual-core, 800MHz...1.2GHz - i.MX 6Dual, dual-core, 800MHz...1.2GHz - i.MX 6DualLite, dual-core, 800MHz...1.0GHz - i.MX 6Solo, single-core, 800MHz...1.0GHz
<b>Chipset</b>	SOC
<b>RAM</b>	Up to 4GB DDR3L SDRAM (DDR-1066), soldered
<b>Flash</b>	Up to 64GB eMMC Flash (optional) or Up to 1GB SLC NAND Flash (optional)
<b>Storage Interfaces</b>	Micro SD Card Socket (optional) 1x MMC/SD/SDIO 1x SATA-II (3Gbps, not supported by Solo/DualLite CPU)
<b>USB</b>	1x USB 2.0 Host/Client, 1x USB 2.0 Host or 1x USB 2.0 Host/Client, 4x USB 2.0 Host (optional)
<b>Serial Interfaces</b>	UART
<b>Bus Interfaces</b>	1x PCI Express x1 1x CAN 2.0B 1x I2C up to 400 Kbit/s 1x SPI (with two chip selects) 1x SMBus
<b>Display Controller</b>	Video, 2D and 3D Graphics Units integrated in i.MX6 Processor OpenGL <sup>®</sup> ES 1.1/2.0/Halt, OpenVG <sup>™</sup> 1.1, OpenCL <sup>™</sup> 1.1 EP Multi-Format Hardware Video Encoder/Decoder
<b>Display Interfaces</b>	Dual-channel LVDS interface, 18 or 24 bit (up to 1920x1080). Also usable as 2x single-channel LVDS interface (up to 1366x768) HDMI V1.4 up to WUXGA (1920x1080) incl. Full-HD @ 30fps MIPI CSI-2 Camera Interface (optional, Feature Connector)
<b>Network Interface</b>	1x 10/100/1000BASE-T Ethernet
<b>Audio Interface</b>	I2S Audio
<b>Miscellaneous</b>	Watchdog Timer for system reset (programmable, 1s ... 600s) 8x GPIO, configurable as input or output 2kbit ID EEPROM on SMBus
<b>OS Support</b>	Linux Board Support Package
<b>Power Requirement</b>	Power Supply +5V +/-5%, 5V Standby Power Consumption 4-6 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**

70 x 70 x 13 mm with heat spreader installed

**Certificates**

UL / CE

## Order Reference - MSC Q7-IMX6PLUS

Order Number	Description	Reference	Cat
66762	Qseven module based on NXP i.MX6S Single-Core Cortex-A9 processor at 800MHz, 1GB DDR3 soldered, integrated Graphics, HDMI max. 1920x1080, dual-channel LVDS, Ethernet controller (10/100/1000Base-T), 512MB NAND Flash, micro SD socket, no SATA, 1x PCIe, 1x USB2.0 Host, 1x USB2.0 Host/Client, I2S Audio; industrial temperature -40...+85°C	MSC Q7-IMX6PLUS-111 PCBFTX	PV
66764	Qseven module based on NXP i.MX6S Single-Core Cortex-A9 processor at 800MHz, 1GB DDR3 soldered, integrated Graphics, HDMI max. 1920x1080, dual-channel LVDS, Ethernet controller (10/100/1000Base-T), 4GB eMMC Flash, micro SD socket, no SATA, 1x PCIe, 4x USB2.0 Host, 1x USB2.0 Host/Client, I2S Audio; industrial temperature -40...+85°C	MSC Q7-IMX6PLUS-112 PCBFTX	PV
66710	Qseven module based on NXP i.MX6D Dual-Core Cortex-A9 processor at 800MHz, 2GB DDR3 soldered, integrated Graphics, HDMI max. 1920x1080, dual-channel LVDS, Ethernet controller (10/100/1000Base-T), 4GB eMMC Flash, micro SD socket, 1x SATA, 1x PCIe, 4x USB2.0 Host, 1x USB2.0 Host/Client, I2S Audio; industrial temperature -40...+85°C	MSC Q7-IMX6PLUS-123 PCBFTX	PV
67693	Qseven module based on NXP i.MX 6DualPlus Dual-Core Cortex-A9 processor at 800MHz, 2GB DDR3 soldered, integrated Graphics, HDMI max. 1920x1080, dual-channel LVDS, Ethernet controller (10/100/1000Base-T), 4GB eMMC Flash, micro SD socket, 1x SATA, 1x PCIe, 4x USB2.0 Host, 1x USB2.0 Host/Client, I2S Audio; industrial temperature -40...+85°C	MSC Q7-IMX6PLUS-163 PCBFTX	PV
66766	Qseven module based on NXP i.MX6DL Dual-Lite Cortex-A9 processor at 800MHz, 2GB DDR3 soldered, integrated Graphics, HDMI max. 1920x1080, dual-channel LVDS, Ethernet controller (10/100/1000Base-T), 4GB eMMC Flash, micro SD socket, no SATA, 1x PCIe, 4x USB2.0 Host, 1x USB2.0 Host/Client, I2S Audio; industrial temperature -40...+85°C	MSC Q7-IMX6PLUS-133 PCBFTX	PV
66768	Qseven module based on NXP i.MX6Q Quad-Core Cortex-A9 processor at 800MHz, 2GB DDR3 soldered, integrated Graphics, HDMI max. 1920x1080, dual-channel LVDS, Ethernet controller (10/100/1000Base-T), 4GB eMMC Flash, micro SD socket, 1x SATA, 1x PCIe, 4x USB2.0 Host, 1x USB2.0 Host/Client, I2S Audio; industrial temperature -40...+85°C	MSC Q7-IMX6PLUS-143 PCBFTX	PV
67692	Qseven module based on NXP i.MX 6QuadPlus Quad-Core Cortex-A9 processor at 800MHz, 2GB DDR3 soldered, integrated Graphics, HDMI max. 1920x1080, dual-channel LVDS, Ethernet controller (10/100/1000Base-T), 4GB eMMC Flash, micro SD socket, 1x SATA, 1x PCIe, 4x USB2.0 Host, 1x USB2.0 Host/Client, I2S Audio; industrial temperature -40...+85°C	MSC Q7-IMX6PLUS-183 PCBFTX	PV
69932	Qseven module based on NXP i.MX 6QuadPlus Quad-Core Cortex-A9 processor at 1GHz, 2GB DDR3 soldered, integrated Graphics, HDMI max. 1920x1080, dual-channel LVDS, Ethernet controller (10/100/1000Base-T), 4GB eMMC Flash, micro SD socket, 1x SATA, 1x PCIe, 4x USB2.0 Host, 1x USB2.0 Host/Client, I2S Audio; commercial temperature 0...70°C	MSC Q7-IMX6PLUS-083 PCBFTX	OR

## Accessories

Order Number	Description	Reference
<b>Carrier Options</b>		
39698	Power supply Unit with connector for Q7-MB-EPx baseboards. Provides 12V and 5V power. Does not include power cable from wall to PSU, please order optionally 40188 (US) or 35512 (EU). Optionally 35513 is a suitable combined SATA data and power cable.	MSC Q7-MB-EP-PSU1
40824	Qseven embedded platform (148 x 102 mm), 10-28V input voltage, 1x RS232 on pin row, 1x RS232 debug port, dual RJ45 LAN connector with LED, 1x SATA, 1x mSATA con., SD card holder, 2x external USB, 1x USB Host/Client, 1 intern USB, I2C, SMBus, SPI, DVI + LVDS, touch screen support, regulated backlight supply, mini PCI Express socket, AC97 Audio codec, Audio on pin row, CMOS battery, system fan support. Extended temperature range -20..+85°C	MSC Q7-MB-EP4-001 PCBFTX
<b>Cooling Options</b>		
1128531	Heatspreader with unthreaded distance bolts for Q7-IMX6Plus module with flip-chip processor package (all single-core & dual-lite versions, all standard temperature versions)	MSC Q7-IMX6-03 HSP-001
1128532	Heatspreader with unthreaded distance bolts for Q7-IMX6Plus module with lidded processor package (extended temperature versions of dual- and quad-core only)	MSC Q7-IMX6-03 HSP-002
1053769	Heat rail for Q7 baseboards. Recommended for conductive heat transfer from the Q7 module to the Q7 baseboard. Already assembled on all MSC baseboards.	MSC Q7-XXX-01 HTR-001
<b>Other Accessories</b>		
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
67822	Debug Adapter for i.MX6-based Qseven, SMARC and nanoRISC modules, with 8-pin FFC cable to connect to COM module, adapter provides headers for JTAG connection to Lauterbach and/or Goepel debuggers	MSC JTAG Adapter FFC 8-pin
<b>Starter Kits</b>		
43885	Starterkit for MSC Q7-IMX6(PLUS) modules. Includes MSC Q7-MB-EP4-001 Baseboard, Heatspreader, Console Adapter, SD Card with Linux OS installation and Power Supply. Does not include MSC Q7-IMX6(PLUS) module. Please order your choice of MSC Q7-IMX6(PLUS)-xyz PCBFTX separately.	MSC Q7-SK-IMX6-EP4-KIT001 SETPAC

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