

MSC Q7-IMX6

Freescale™ i.MX6



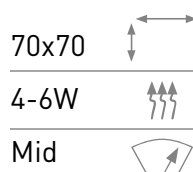
Description

The design of the MSC Q7-IMX6 module is based on Freescale's new i.MX6 CPU 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-IMX6 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 Freescale i.MX6 ARM Cortex-A9 CPU (single, dual or quad core) with up to 1.2 GHz, up to 4GB DDR3 DRAM and up to 32GB eMMC Flash memory as well as an extensive set of interface controllers. The module provides the standard Qseven interface, allowing simple integration with Qseven baseboards.

For evaluation and design-in of the Q7-IMX6 modules, MSC provides a development platform, target platform and a starter kit.

The MSC Q7-IMX6 module is supported by Linux, Android and Windows Embedded Compact 7.



+85°C

-40°C



Highlights

- Freescale™ i.MX6 ARM® Cortex™-A9 quad-core, dual-core or single-core CPU
- MPEG-4 Video Encoding/Decoding 1080p
- HDMI graphics 1920 x 1080 x 30fps
- Dual-channel LVDS 1920 x 1080 x 30fps (also usable as two sep. LVDS channels)
- up to 4GB DDR3 DRAM
- up to 32GB eMMC Flash Memory
- 10/100/1000 GbE LAN Interface
- 1x PCI-Express x1
- 1x SATA-II (3Gbps, quad-/dual-core only)
- 1x USB Device/Host + up to 7x USB 2.0
- MMC / SD / SDIO Interface
- 1x CAN Interface
- AC'97 and I2S Audio Interface
- UART, SPI, BT.656 Camera, MIPI_CSI-2

Technical Data – MSC Q7-IMX6

Module Standard

Qseven™ Standard

Rev 1.2 and Rev. 2.0 compliant interface

Core Logic, Memory

CPU

Freescale™ i.MX6 ARM® Cortex™-A9:
- Quad-Core 800MHz...1.2GHz
- Dual-Core 800MHz...1.2GHz
- Single-Core 800MHz...1.0GHz

RAM

512MB...4GB LVDDR3-1066 SDRAM, soldered

Storage Interfaces

Flash

up to 32GB eMMC Flash, soldered (optional)

SATA

1x SATA-II (3Gbps) for Quad-Core and Dual-Core CPUs only

Bus Interfaces

USB

1x USB 2.0 Host/Client, 1x USB 2.0 Host or 7x USB 2.0 Host (opt.)

PCI Express™

1x PCI Express x1

CAN Bus

1x CAN Bus

Serial

1x UART (on Qseven Connector, requires Q7-Rev. 2.0 baseboard)
1x UART (on Feature Connector)

I2C Bus

up to 400 Kbit/s

SPI

2x Slave select

SMBus

1x SMBus

Memory Card

1x MMC/SD/SDIO on edge connector

Display Interface

Graphics Controller

Video, 2D and 3D Graphics Units integrated in i.MX6 Processor
OpenGL® ES 1.1/2.0/Halt, OpenVG™ 1.1, OpenCL™ 1.1 EP
Multi-Format Hardware Video Encoder/Decoder

LCD Interface

Dual-channel LVDS interface, 18 or 24 bit (up to 1920x1200)
Also usable as 2x single-channel LVDS interface (up to 1366x768)

HDMI Interface

HDMI V1.4 up to WUXGA (1920x1200) incl. Full-HD @ 30fps

Camera Interfaces

BT.656 Camera Interface (on Feature Connector)
MIPI_CSI-2 Camera Interface (on Feature Connector)

Network Interface

Ethernet

1x 10/100/1000 Base-T Gbit Ethernet

Sound Interface

Audio

AC'97 and I2S audio interface (must match codec on carrier board)

Miscellaneous

Real Time Clock

Accuracy < 6ppm over full industrial temperature range
Battery buffered via connector pin, battery on baseboard
Current consumption 800nA typ.

Watchdog Timer

Initiates system reset (programmable, 1s ... 600s)

ID EEPROM

2kbit on SMB Bus

Operating System Support

Linux

Board Support Package

Android

Board Support Package (in preparation)

Windows Embedded Compact 7

Board Support Package

Power Supply

Power Supply Voltage

+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 ... +125° C storage

Humidity

5 ... 90% (operating, non condensing)
5 ... 90% (storage, non-condensing)

Mechanical

Dimensions

70 mm x 70 mm x 13 mm with heat spreader installed

Order Reference – MSC Q7-IMX6

Order Number	Description	Reference	Cat. ¹⁾
42461	Qseven module with Freescale i.MX6 Quad-Core at 1.2GHz, 2GB DDR3, 4GB eMMC Flash, 7x USB 2.0 host, 1x USB 2.0 host/client, 1x SATA-II interface, 0 to +70° C	MSC Q7-IMX6-042	PV
45703	Qseven module with Freescale i.MX6 Quad-Core at 1.0GHz, 2GB DDR3, 4GB eMMC Flash, 7x USB 2.0 host, 1x USB 2.0 host/client, 1x SATA-II interface, -40 to +85° C	MSC Q7-IMX6-143	PV
43534	Qseven module with Freescale i.MX6 Quad-Core at 1.0GHz, 1GB DDR3, no Flash, 7x USB 2.0 host, 1x USB 2.0 host/client, 1x SATA-II interface, -40 to +85° C	MSC Q7-IMX6-141	OR
42459	Qseven module with Freescale i.MX6 Dual-Core at 1.2GHz, 2GB DDR3, 4GB eMMC Flash, 7x USB 2.0 host, 1x USB 2.0 host/client, 1x SATA-II interface, 0 to +70° C	MSC Q7-IMX6-022	PV
44866	Qseven module with Freescale i.MX6 Dual-Core at 1.0GHz, 1GB DDR3, 4GB eMMC Flash, 7x USB 2.0 host, 1x USB 2.0 host/client, 1x SATA-II interface, -40 to +85° C	MSC Q7-IMX6-122	PV
43536	Qseven module with Freescale i.MX6 Dual-Core at 1.0GHz, 1GB DDR3, no Flash, 7x USB 2.0 host, 1x USB 2.0 host/client, 1x SATA-II interface, -40 to +85° C	MSC Q7-IMX6-121	OR
42457	Qseven module with Freescale i.MX6 Single-Core at 1.0GHz, 1GB DDR3, 4GB eMMC Flash, 7x USB 2.0 host, 1x USB 2.0 host/client, no SATA interface, 0 to +70° C	MSC Q7-IMX6-012	PV
43853	Qseven module with Freescale i.MX6 Single-Core at 1.0GHz, 512MB DDR3, no Flash, 1x USB 2.0 host, 1x USB 2.0 host/client, no SATA interface, 0 to +70° C	MSC Q7-IMX6-011	OR

1) PV = Preferred Variant; OR = On Request (in OEM quantities only)

Accessories

Order Number	Description	Reference
	Cooling	
42592	Heatspreader for Q7-IMX6 (extended temp. versions of dual- and quad-core only)	MSC Q7-IMX6-01 HSP-001
1112356	Heatspreader for Q7-IMX6 (all single-core versions, all std. temp. versions)	MSC Q7-IMX6-02 HSP-001
	Carrier Boards	
40824	Qseven embedded platform (148 x 102 mm), 10-28V input voltage, 1x RS232 on pin row, 1x RS232 debug port, Dual RJ45 connector with LED for LAN, 1x SATA, 1x mSATA connector, SD Card holder, 2x external USB, 1x USB	MSC Q7-MB-EP4-001
39698	Power Supply Unit with connector for Q7-MB-EPx baseboards; does not include power cable from wall outlet to PSU (#35512 for EU version, #40188 for US version)	MSC Q7-MB-EP-PSU1
	Starter Kit	
43885	Starterkit for MSC Q7-IMX6 module; with EP4 Baseboard, Power Supply, Heatspreader, Debug Adapter, Linux on SD Card	MSC Q7-SK-IMX6-EP4-KIT001

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