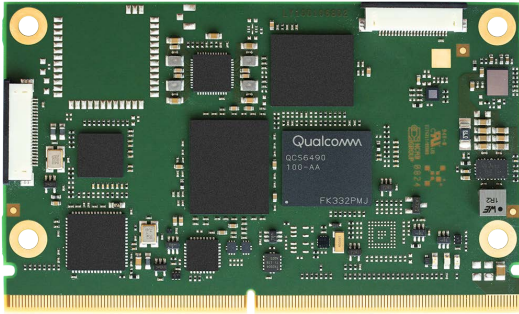


MSC SM2S-QCS6490

Qualcomm[®] QCS6490
Arm[®] Cortex[®]-A78/A55



 82 x 50 mm

 7 W

 -30 +85 °C



Description

The MSC SM2S-QCS6490 SMARC 2.1.1 module family is powered by the Qualcomm[®] QCS6490 processor, a 6nm processor with high performance and best in class power to performance ratio. QCS6490 integrates Qualcomm[®] Kryo[™] 670 CPU which contains up to eight cores: four Arm[®] Cortex[®]-A78 cores, four Arm[®] Cortex[®]-A55 cores, Qualcomm[®] Adreno[™] 643 GPU, Qualcomm[®] Adreno[™] 633 VPU and the latest re-engineered Qualcomm[®] Hexagon[™] processor. The GPU supports video encode/decode at up to 4K30/4K60 and many different display connectivities (LVDS, MIPI-DSI, eDP/DP). It delivers powerful edge AI for high-performance with upto 12 TOPS at low power and massive camera support with 4 MIPI-CSI inputs.

This solution delivers powerful performance and is purpose-built for industrial and commercial IoT applications such as ruggedized handhelds and tablets, kiosks, industrial scanners, dash cameras, point-of-sale systems and human machine interface systems.

The module is compliant with the latest SMARC 2.1.1 standard, allowing easy integration with SMARC baseboards. For evaluation and design-in of the SM2S-QCS6490 module, Avnet Embedded provides a development platform and a starter kit. Support for Linux is available (Android support available on request).

Highlights

- Quad core Arm Cortex-A78 up to 2.7GHz
- And Quad core Arm Cortex-A55 @ 1.95GHz
- Adreno 643 GPU @ 812MHz
- AI DSP/NSP Dual HVX, 4K HMX up to 12(15) TOPs
- Up to 16GB LPDDR5 SDRAM 6400MT/s
- Up to 1TB UFS Flash
- Display up to FHD+144Hz
- Video up to 4k30(E)/4K60(D)
- 5xUSB 2.0, 2x USB 3.1
- 2x PCIe Gen3 x1, 1x PCIe Gen3 x2
- 1x MIPI-DSI or LVDS
- 1x DP 1.4 (2 lane)
- 1x eDP/DP
- 4x MIPI-CSI Camera Interface
- WLAN/BT Wireless Module (option)
- 2x Gigabit Ethernet
- 2x I2S Audio Interface
- 4x UART, 2x SPI, 2x CAN2.0-FD
- 5x I²C
- HW Key manager and ECC, Secure boot, Crypto engines, etc.
- Windows 11 IOT, Yocto Linux
- Ubuntu or Android (on request)

Technical Data - MSC SM2S-QCS6490

Technology	Arm
Formfactor	SMARC™ 2.1.1 Short Size
CPU	QCS6490: 1x A78@2.7GHz, 3x A78@2.4GHz, 4xA55@1.95GHz 2xHVX,4K-HMX 1.45GHz (12.15 INT8 TOPS)
Chipset	SOC
RAM	Up to 16GB LPDDR5 SDRAM, up to 6400MT/s, soldered
Flash	Up to 1TB UFS, soldered (optional)
Storage Interfaces	UFS (onboard) NVME (carrier) SD-Card (carrier)
USB	2x USB 3.1 Host interfaces 5x USB 2.0 Host interfaces
Serial Interfaces	4x UART (two with handshake)
Bus Interfaces	Up to 4x PCI-Express x1 Gen. 3 lanes 5x I ² C (1x general, 2x CAM, 1x LCD, 1x PM) 2x SPI Bus 1x SDIO 2x CAN2.0-FD
Display Controller	Adreno 643 GPU @ up to 812MHz
Display Interfaces	MIPI-DSI 4 - lane FHD+ @144Hz LVDS (optional instead of MIPI-DSI) 1920x1200 WUXGA 60Hz DP 1.4 (2 lane) 4K30 (4K60 compression to 16bpp) eDP/DP (4 lane) 4k60 (4K120 compression to 16bpp)
Network Interface	2x 10/100/1000Base-T
Audio Interface	2x I2S Audio
Security Device	Infineon Trusted Platform Module 2.0 HW Key manager and ECC, Secure boot, Crypto engines, Key provisioning security, Qualcomm® Trusted Execution Environment (TEE), Qualcomm Content Protection (Widevine), Secure camera/UI

Miscellaneous	<p>MIPI CSI-2 camera interface on SMARC interface: 1x 2 lane, 1x 4 lane</p> <p>MIPI CSI-2 camera interface on CSI Connector: 1x 2 lane, 1x 4 lane</p> <p>Watchdog Timer: Initiates system reset, (programmable, 1s ... 255h)</p> <p>Fan Supply: PWM Speed Control for system fan on carrier board</p> <p>RTC battery: external</p> <p>System Monitoring: Voltage, Temperature, CPU Fan, System Fan</p> <p>EEPROM: 64kbit ID EEPROM on I2C bus</p> <p>GPIO: 14x GPIO, configurable as input or output, 13x interrupt capable</p>
Feature Highlights	SMARC™ 2.1.1 compliant
Firmware	UEFI boot
OS Support	<p>Windows 11 IoT</p> <p>Yocto Linux</p> <p>Ubuntu Linux (on request)</p> <p>Android (on request)</p>
Power Requirement	<p>Power Supply +5V +/-5%, 5V Standby</p> <p>Power Consumption 7W typ. (tbd: depending on CPU, CPU load and onboard features)</p>
Environment	<p>Temperature Range: Commercial: 0° ... 70°C (operating) -20° ... 85°C (storage) Extended: -30° ... 85°C (operating) -40° ... 85°C (storage)</p> <p>Humidity: 5 ... 95% (operating, non-condensing) 5 ... 95% (storage, non-condensing)</p>
Dimensions	82 x 50 mm
Certificates	UL / CE
Cooling	Heatspreader
Carrier	<p>MSC SM2-MB-EP1</p> <p>MSC SM2-MB-EP5</p>

Order Reference - MSC SM2S-QCS6490

Order Number	Description	Reference	Cat*
111987	SMARC 2.1.1 module with Qualcomm QCS6490 4x A78 @2.4/2.7GHz + 4x A55 @1,9GHz 5W CPU TDP, Graphics: Adreno A643@812MHz, NPU: 12 TOPs, 8GB LPDDR5 SDRAM 6400MT/s, DP 1.4 (2 lane), eDP/DP and MIPI DSI interfaces, 2x MIPI CSI on SMARC and 2x onboard, Ethernet: 2x 1Gbit, 64GB UFS memory, PCIe: 2x PCIe Gen3 x1 + 1x PCIe Gen3 x2, TPM 2.0, USB: 5x USB 2.0 + 2x USB 3.1, WLAN/BT, TPM 2.0, 2x CAN FD (Engineering Sample - get in touch with your sales)	MSC SM2S-QCS6490-FPF-36N08F1C ES1 PCBES	PV
111994	SMARC 2.1.1 module with Qualcomm QCS5430 2x A78 @2.1GHz + 4x A55 @1,8GHz 3W CPU TDP, Graphics: Adreno A642L@315Mhz, NPU: 3.5 TOPs, 4GB LPDDR5 SDRAM 6400MT/s, DP 1.4 (2 lane), eDP/DP and LVDS interfaces, 2x MIPI CSI on SMARC and 2x onboard, Ethernet: 2x 1Gbit, 32GB UFS memory, PCIe: 2x PCIe Gen3 x1 + 1x PCIe Gen3 x2, TPM 2.0, USB: 5x USB 2.0 + 2x USB 3.1, WLAN/BT, TPM 2.0, 2x CAN FD (Engineering Sample - get in touch with your sales)	MSC SM2S-QCS5430-FP15-25N02F1C ES1 PCBES	PV

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

Accessories

Order Number	Description	Reference
TBD2	Passive Heatsink for SM2S-QCS6490 module, consisting of a single-piece aluminum pin cooler and thermal pad for contact to the processor, with 2.7mm through-hole standoffs	
TBD1	Heatspreader for SM2S-QCS6490 module, consisting of a single-piece aluminum plane and thermal pad for contact to the processor, with 2.7mm through-hole standoffs	
Carrier Options		
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.x 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 USB 2.0 Host/Device, 2x SPI, I2C, 8 GPIO on FC, 1x HDMI, LVDS/eDP/DSI on JILI30 connector, SD 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

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