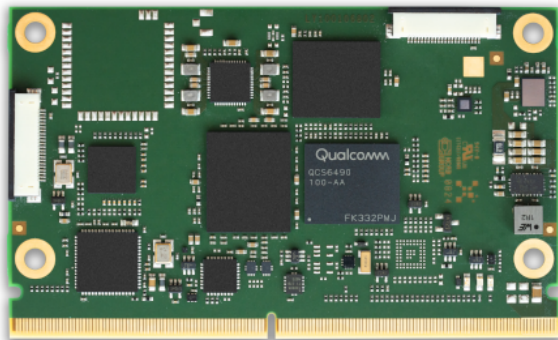


## TRIA SM2S-QCS6490

Qualcomm® QCS6490 Arm® Cortex®-A78/A55

82 x 50 mm



7 W

-30 +85 °C



## 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 I<sup>2</sup>C
- HW Key manager and ECC, Secure boot, Crypto engines, etc.
- Windows 11 IOT, Yocto Linux and Android (Ubuntu Linux on request)

## Technical Data

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Technology</b>         | Arm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Formfactor</b>         | SMARC™ 2.2 Short Size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>CPU</b>                | QCS6490:<br>1x A78@2.7GHz, 3x A78@2.4GHz, 4xA55@1.95GHz<br>2xHVX,4K-HMX 1.45GHz<br>(12.15 INT8 TOPS)                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Chipset</b>            | SOC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>RAM</b>                | Up to 16GB LPDDR5 SDRAM, up to 6400MT/s, soldered                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Flash</b>              | Up to 1TB UFS, soldered (optional)                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Storage Interfaces</b> | UFS (onboard)<br>NVME (carrier)<br>SD-Card (carrier)                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>USB</b>                | 2x USB 3.1 Host interfaces<br>5x USB 2.0 Host interfaces                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Serial Interfaces</b>  | 4x UART (two with handshake)                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Bus Interfaces</b>     | Up to 4x PCI-Express x1 Gen. 3 lanes<br>5x I <sup>2</sup> C (1x general, 2x CAM, 1x LCD, 1x PM)<br>2x SPI Bus<br>1x SDIO<br>2x CAN2.0-FD                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Display Controller</b> | Adreno 643 GPU @ up to 812MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Display Interfaces</b> | MIPI-DSI 4 - lane<br>FHD+ @144Hz<br><br>LVDS (optional instead of MIPI-DSI)<br>1920x1200 WUXGA 60Hz<br><br>DP 1.4 (2 lane)<br>4K30 (4K60 compression to 16bpp)<br><br>eDP/DP (4 lane)<br>1920x1080p60                                                                                                                                                                                                                                                                                                     |
| <b>Network Interface</b>  | 2x 10/100/1000Base-T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Audio Interface</b>    | 2x I2S Audio                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Security Device</b>    | Infineon Trusted Platform Module 2.0<br><br>HW Key manager and ECC, Secure boot, Crypto engines, Key provisioning security, Qualcomm® Trusted Execution Environment (TEE), Qualcomm Content Protection (Widevine), Secure camera/UI                                                                                                                                                                                                                                                                       |
| <b>Miscellaneous</b>      | MIPI CSI-2 camera interface on SMARC interface:<br>1x 2 lane, 1x 4 lane<br>MIPI CSI-2 camera interface on CSI Connector:<br>2x 4 lane<br>Watchdog Timer:<br>Initiates system reset, (programmable, 1s ... 255h)<br>Fan Supply:<br>PWM Speed Control for system fan on carrier board<br>RTC battery:<br>external<br>System Monitoring:<br>Voltage, Temperature, CPU Fan, System Fan<br>EEPROM:<br>64kbit ID EEPROM on I2C bus<br>GPIO:<br>14x GPIO, configurable as input or output, 13x interrupt capable |

|                           |                                                                                                                                                                                                                                                   |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Feature Highlights</b> | SMARCTM 2.2 compliant                                                                                                                                                                                                                             |
| <b>Firmware</b>           | UEFI boot                                                                                                                                                                                                                                         |
| <b>OS Support</b>         | Windows 11 IoT<br>Yocto Linux<br>Android<br>Ubuntu Linux (on request)                                                                                                                                                                             |
| <b>Power Requirement</b>  | Power Supply +5V +/-5%, 5V Standby<br>Power Consumption 7W typ. (tbd: depending on CPU, CPU load and onboard features)                                                                                                                            |
| <b>Environment</b>        | Temperature Range:<br>Commercial: 0° ... 70°C (operating) -20° ... 85°C (storage)<br>Extended: -30° ... 85°C (operating) -40° ... 85°C (storage)<br><br>Humidity:<br>5 ... 95% (operating, non-condensing)<br>5 ... 95% (storage, non-condensing) |
| <b>Dimensions</b>         | 82 x 50 mm                                                                                                                                                                                                                                        |
| <b>Certificates</b>       | UL / CE                                                                                                                                                                                                                                           |
| <b>Cooling</b>            | Heatspreader                                                                                                                                                                                                                                      |
| <b>Carrier</b>            | TRIA SM2-MB-EP1<br>TRIA SM2-MB-EP5-012                                                                                                                                                                                                            |

Technical Data for TRIA SM2S-QCS6490

## Order Reference

| Order No. | Description                                                                                                                                                                                                                                                                                                                                                                                                                           | Reference                            | Status* |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|---------|
| 117779    | SMARC 2.2 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, USB: 5x USB 2.0 + 2x USB 3.1, WLAN/BT, TPM 2.0, 2x CAN FD, Extended Temperature -25°... +85°C      | MSC SM2S-QCS6490-FPF-36N08F1E PCBFTX | PV      |
| 117749    | SMARC 2.2 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, USB: 5x USB 2.0 + 2x USB 3.1, WLAN/BT, TPM 2.0, 2x CAN FD, Extended Temperature -25°... +85°C            | MSC SM2S-QCS5430-FP1-25N02F1E PCBFTX | PV      |
| 117777    | SMARC 2.2 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 LVDS interfaces, 2x MIPI CSI on SMARC and 2x onboard, Ethernet: 2x 1Gbit, 64GB UFS memory, PCIe: 2x PCIe Gen3 x1 + 1x PCIe Gen3 x2, USB: 5x USB 2.0 + 2x USB 3.1, WLAN/BT, TPM 2.0, 2x CAN FD, Extended Temperature -25°... +85°C          | MSC SM2S-QCS6490-FPF-36N02F1E PCBFTX | PV      |
| 117775    | SMARC 2.2 module with Qualcomm QCS6490 4x A78 @2.4/2.7GHz + 4x A55 @1.9GHz, 5W CPU TDP, Graphics: Adreno A643@812MHz, NPU: 12 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, 64GB UFS memory, PCIe: 2x PCIe Gen3 x1 + 1x PCIe Gen3 x2, USB: 5x USB 2.0 + 2x USB 3.1, no WLAN/BT, TPM 2.0, 2x CAN FD, Extended Temperature -25°... +85°C       | MSC SM2S-QCS6490-FPF-26N0271E PCBFTX | PV      |
| 117751    | SMARC 2.2 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, USB: 5x USB 2.0 + 2x USB 3.1, no WLAN/BT, TPM 2.0, 2x CAN FD, Extended Temperature -25°... +85°C         | MSC SM2S-QCS5430-FP1-25N0271E PCBFTX | PV      |
| 117783    | SMARC 2.2 module with Qualcomm QCS6490 4x A78 @2.4/2.7GHz + 4x A55 @1.9GHz, 5W CPU TDP, Graphics: Adreno A643@812MHz, NPU: 12 TOPs, 16GB 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, 128GB UFS memory, PCIe: 2x PCIe Gen3 x1 + 1x PCIe Gen3 x2, USB: 5x USB 2.0 + 2x USB 3.1, no WLAN/BT, TPM 2.0, 2x CAN FD, Extended Temperature -25°... +85°C | MSC SM2S-QCS6490-FPF-47N0871E PCBFTX | PV      |
| 117747    | SMARC 2.2 module with Qualcomm QCS5430 2x A78 @2.1GHz + 4x A55 @1.8GHz, 3W CPU TDP, Graphics: Adreno A642L@315Mhz, NPU: 3.5 TOPs, 2GB LPDDR5 SDRAM 6400MT/s, DP 1.4 (2 lane), eDP/DP and MIPI DSI interfaces, 2x MIPI CSI on SMARC and 0x onboard, Ethernet: 0x 1Gbit, 32GB UFS memory, PCIe: 1x PCIe Gen3 x1 + 0x PCIe Gen3 x2, USB: 2x USB 2.0 + 0x USB 3.1, no WLAN/BT, TPM 2.0, 0x CAN FD, Extended Temperature -25°... +85°C     | MSC SM2S-QCS5430-FP1-15N0821E PCBFTX | OR      |

| Order No. | Description                                                                                                                                                                                                                                                                                                                                                                                                                         | Reference                            | Status* |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|---------|
| 122445    | SMARC 2.2 module with Qualcomm QCS6490 4x A78 @2.4/2.7GHz + 4x A55 @1.9GHz, 5W CPU TDP, Graphics: Adreno A643@812MHz, NPU: 12 TOPs, 4GB LPDDR5 SDRAM 6400MT/s, DP 1.4 (2 lane), eDP/DP and MIPI DSI interfaces, 2x MIPI CSI on SMARC and 0x onboard, Ethernet: 0x 1Gbit, 32GB UFS memory, PCIe: 1x PCIe Gen3 x1 + 0x PCIe Gen3 x2, USB: 2x USB 2.0 + 0x USB 3.1, no WLAN/BT, TPM 2.0, 0x CAN FD, Extended Temperature -25°... +85°C | MSC SM2S-QCS6490-FPF-25N0821E PCBFTX | OR      |
| 117781    | SMARC 2.2 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, USB: 5x USB 2.0 + 2x USB 3.1, no WLAN/BT, TPM 2.0, 2x CAN FD, Extended Temperature -25°... +85°C | MSC SM2S-QCS6490-FPF-36N0871E PCBFTX | PV      |
| 119090    | SMARC 2.2 module with Qualcomm QCS5430 2x A78 @2.1GHz + 4x A55 @1.8GHz, 3W CPU TDP, Graphics: Adreno A642L@315Mhz, NPU: 3.5 TOPs, 8GB 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, 64GB UFS memory, PCIe: 2x PCIe Gen3 x1 + 1x PCIe Gen3 x2, USB: 5x USB 2.0 + 2x USB 3.1, no WLAN/BT, TPM 2.0, 2x CAN FD, Extended Temperature -25°... +85°C       | MSC SM2S-QCS5430-FP1-36N0271E PCBFTX | PV      |

Ordering Information for TRIA SM2S-QCS6490

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

## Accessories

### Cooling Options

| Order No. | Description                                                                                                                                                                                      | Nomenclature            |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| 116667    | Passive Heatsink for all SM2S-QCS6490 and SM2S-QCS5430 modules, consisting of a single-piece aluminum pin cooler and thermal pad for contact to the processor, with 2.7mm through-hole standoffs | MSC SM2S-QCS-01 HSI-001 |
| 116668    | Heatspreader for all SM2S-QCS6490 and SM2S-QCS5430 modules, consisting of a single-piece aluminum plane and thermal pad for contact to the processor, with 2.7mm through-hole standoffs          | MSC SM2S-QCS-01 HSP-001 |

Cooling Options TRIA SM2S-QCS5430/QCS6490

### Carrier Options

| Order No. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Reference                  |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| 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  |
| 115138    | SMARC 2.1 compatible embedded platform (146 x 80mm), 10-36V input voltage, 3x RS232, 2x CAN, dual RJ45 LAN with LED (from module), 1x M.2 2280 Key M slot, mPCIe slot, 1x USB 3.0 Type A, 1x USB 3.0/DisplayPort Type C, 1x USB 2.0 Type A, 1x USB 2.0 internal, 1x μUSB 2.0 Host/Device, 2x SPI, I <sup>2</sup> C, 12 GPIO on FC, 1x DisplayPort++, LVDS/eDP/DSI on JIL130 connector, μSD Card Slot, regulated backlight supply, I2S Audio with amplifier, system fan connector, camera connector, RTC battery. Industrial temperature range -40..+85°C | MSC SM2S-MB-EP5-012 PCBFTX |

Carrier Options TRIA SM2S-QCS5430/QCS6490

### Starterkit Options

| Order No. | Description                                                                                                                                                                                                                                                                                                  | Reference                            |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| 114394    | Starter Kit for SMARC Short Size modules for Qualcomm QCS6490 / QCS5430 processor. Includes TRIA SM2-MB-EP1 Mini-ITX Baseboard, Heatsink and Power Supply with cable kit. The StarterKit does not include the SMARC module. Please order your choice of TRIA SM2S-QCS6490 or SM2S-QCS5430 module separately. | MSC SM2-SK-QCS6490-EP1-KIT001 BRDFTX |
| 117702    | QCS6490 Vision-AI Development Kit for Qualcomm QCS6490 / QCS5430 processor. Includes TRIA SM2S-QCS6490 module, Heatsink, TRIA SM2-MB-EP6 Mini Baseboard, Camera, Power Supply and USB-C cable. Example Software for Yocto Linux and Linux BSP will be provided by TRIA.                                      | MSC SM2-SK-QCS6490-EP6-KIT001 BRDFTX |

Starter Kits TRIA SM2S-QCS6490/QCS5430

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