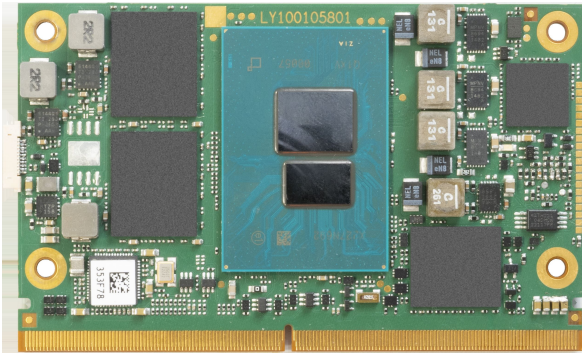




## MSC SM2S-ASL

### Intel Atom<sup>®</sup> Processors x7000RE/C Series



 82 x 50 mm

 8 / 17 W

 -40 +85 °C



## Description

The new MSC SM2S-ASL module features the Intel Atom<sup>®</sup> processors x7000RE/C Series (codenamed “Amston Lake”). The CPU architecture is based on the same Efficient-cores and Intel<sup>®</sup> UHD graphics driven by Xe architecture as the 12th Gen Intel<sup>®</sup> Core™ processors, thus easing up application migration across Intel<sup>®</sup> CPU performance and power ranges. With support for up to eight processor cores, the module fits to a wide range of applications including point-of-sales terminals, digital signage controllers, HMI solutions and medical equipment. The board is ideal for system products that are exposed to harsh ambient conditions. It is designed for extended temperature range and 24/7 continuous operation.

The new MSC SM2S-ASL offers triple independent display support with a maximum of 4k resolution, fast LPDDR5 memory with up to 16GB and optional IB ECC capabilities, eMMC 5.1, USB 3.1 and PCIe Gen3 on a power saving and cost-efficient SMARC 2.1.1 module.

Different SOCs with dual-, quad- and eight-core processors are supported by this design. In addition to an extensive set of interfaces and features, the MSC SM2S-ASL offers 2 Gigabit Ethernet based on Intel<sup>®</sup> i226 and supports up to 2.5GbE bandwidth.

For evaluation and design-in of the MSC SM2S-ASL module, Avnet Embedded provides a suitable SMARC 2.1.1 development platform. A complete, ready-to-run Starterkit is also available.

## Highlights

- Up to eight processing cores
- Power efficient processors, TDP 6 to 12W
- Integrated Intel UHD Gen.12 graphics, max. 32 executing units
- Up to 16GB LPDDR5 SDRAM, In-band ECC
- Up to 256GB eMMC 5.1 Flash (optional)
- SATA-III interface (6Gbps)
- 2x DP++
- LVDS / Embedded DisplayPort and MIPI-DSI
- Triple Independent Display support
- 2x MIPI-CSI Camera Interface
- Up to 4x PCI Express x1/x2/x4 Gen. 3
- 2x USB 3.1 Host interfaces
- 6x USB 2.0 Host interfaces
- 2x 1/2,5 Gigabit Ethernet (Intel<sup>®</sup> i226)
- 1x SGMII Interface on PCIE-D
- UART, SPI, I2C, SMBus
- HD/I2S Audio
- Trusted Platform Module TPM 2.0
- SMARC 2.1.1 compliant
- UEFI Firmware

## Technical Data - MSC SM2S-ASL

<b>Technology</b>	x86
<b>Formfactor</b>	SMARC® 2.1.1 Short Size
<b>CPU</b>	<p>Intel Atom® x7835RE, octa-core, 1.3GHz, 32EU, TCC, 12W, IUC, ET            Intel Atom® x7433RE, quad-core, 1.5GHz, 32EU, TCC, 9W, IUC, ET            Intel Atom® x7213RE, dual-core, 2.0GHz, 16EU, TCC, 9W, IUC, ET            Intel Atom® x7211RE, dual-core, 1.0GHz, 16EU, TCC, 6W, IUC, ET            Intel Atom® x7405C, quad-core, 2.2GHz, no GPU, TCC, 12W, EUC, CT            Intel Atom® x7203C, dual-core, 2.0GHz, no GPU, TCC, 9W, EUC, CT</p> <p>Note: base frequency shown, other frequencies supported</p> <p>ET- Extended temperature            CT- Commercial temperature            EUC - Intel Embedded Use Conditions            IUC - Intel Industrial Use Conditions</p>
<b>Chipset</b>	Integrated in SOC
<b>RAM</b>	Up to 16GB LPDDR5 SDRAM, up to 4800MT/s, IB ECC, soldered
<b>Flash</b>	Up to 256GB eMMC V5.1 Flash, soldered (optional)
<b>Storage Interfaces</b>	1x SATA-III 6Gbps
<b>USB</b>	2x USB 3.1 Host interfaces 6x 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 1x I2C Bus 1x SPI Bus (Boot) 1x SPI Bus (general purpose)/ eSPI (optional) 1x SMBus
<b>Display Controller</b>	<p>Integrated Intel UHD Graphics (Gen12) Up to 32 execution units (EU)</p> <p>Note: only available with the Intel Atom Processor x7000RE Series</p>
<b>Display Interfaces</b>	<p>Three independent displays supported 2x DP++ Dual-Channel LVDS 24/18 bit up to 1920 x 1200 @ 60Hz or Embedded DisplayPort 1.4b up to 4096 x 2304 @ 60Hz and MIPI-DSI x4 Interface up to 4096 x 2160 @ 60Hz (optional)</p> <p>Note: display interfaces are only available with the Intel Atom Processor x7000RE Series</p>
<b>Network Interface</b>	2x 10/100/1000Base-T, up to 2.5Gbps based on Intel i226 with TSN support 1x SGMII (up to 2.5Gbps) Interface on PCIE-D
<b>Audio Interface</b>	High Definition Audio and I2S Audio or 2x I2S Audio

<b>Security Device</b>	Infineon Trusted Platform Module 2.0
<b>Miscellaneous</b>	MIPI CSI-2 camera interface (CSI0, 2 lane) MIPI CSI-2 camera interface (CSI1, 4 lane) Watchdog Timer: Initiates system reset, (programmable, 1s ... 255h) Fan Supply: PWM Speed Control for system fan on carrier board RTC battery: external System Monitoring: Voltage, Temperature, CPU Fan, System Fan
<b>Feature Highlights</b>	SMARC™ 2.1.1 compliant
<b>Firmware</b>	AMI Aptio UEFI
<b>OS Support</b>	Windows 10 IoT Enterprise 2021 LTSC Yocto Project (LTS kernel 2021)
<b>Power Requirement</b>	+5V +/-5% +5V Standby
<b>Environment</b>	Temperature Range: Commercial: 0° ... 60°C (operating) Industrial: -40° ... 85°C (operating)  -25° ... 85°C (storage)  Humidity: 5 ... 95% (operating, non-condensing) 5 ... 95% (storage, non-condensing)
<b>Dimensions</b>	82 x 50 mm
<b>Certificates</b>	UL / CE
<b>Cooling</b>	Heatspreader Heatsink
<b>Carrier</b>	MSC SM2-MB-EP1

## Order Reference - MSC SM2S-ASL

Order Number	Description	Reference	Cat*
tbd	SMARC 2.1.1 module with Intel Atom® x7835RE, Octa-Core (1.3GHz), 12W, 16GB LPDDR5 (4800 MT/s), 32EU, 32GB eMMC, 2x GbE LAN, 2x USB 3.1, 6x USB 2.0, TPM 2.0, eDP, industrial temperature -40°C...+85°C	MSC SM2S-ASL-x7835RE-1 ES2 PCBES	OR
tbd	SMARC 2.1.1 module with Intel Atom® x7433RE, Quad-Core (1.5GHz), 9W, 16GB LPDDR5 (4800 MT/s), 32EU, 32GB eMMC, 2x GbE LAN, SATA, SGMII, 2x USB 3.1, 6x USB 2.0, TPM 2.0, LVDS, industrial temperature -40°C...+85°C	MSC SM2S-ASL-x7433RE-1 ES2 PCBES	OR
tbd	SMARC 2.1.1 module with Intel Atom® x7213RE, Dual-Core (2.0GHz), 9W, 8GB LPDDR5 (4800 MT/s), 16EU, 16GB eMMC, 2x GbE LAN, 2x USB 3.1, 6x USB 2.0, TPM 2.0, LVDS, industrial temperature -40°C...+85°C	MSC SM2S-ASL-x7213RE-1 ES2 PCBES	OR
tbd	SMARC 2.1.1 module with Intel Atom® x7211RE, Dual-Core (1.0GHz), 6W, 4GB LPDDR5 (4800 MT/s), 16EU, 16GB eMMC, 2x GbE LAN, 2x USB 3.1, 6x USB 2.0, TPM 2.0, LVDS, industrial temperature -40°C...+85°C	MSC SM2S-ASL-x7211RE-1 ES2 PCBES	OR
tbd	SMARC 2.1.1 module with Intel Atom® x7203C, Dual-Core (2.0GHz), 9W, 4GB LPDDR5 (4800 MT/s), 16EU, 16GB eMMC, 2x GbE LAN, 2x USB 3.1, 6x USB 2.0, TPM 2.0, no Graphics, commercial temperature 0°C...+60°C	MSC SM2S-ASL-x7203C-1 ES2 PCBES	OR

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

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