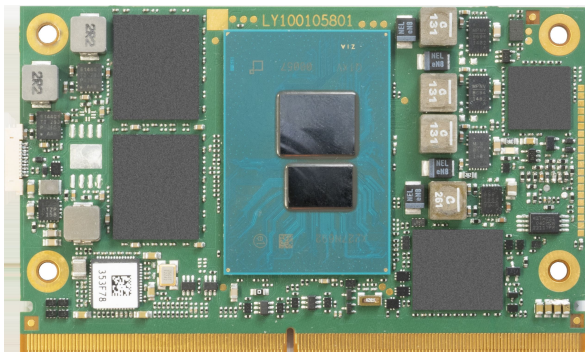



MSC SM2S-ASL

Intel® Atom® 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® processors x7000RE/C Series (codenamed “Amston Lake”). The CPU architecture is based on the same Efficient-cores and Intel® UHD graphics driven by Xe architecture as the 12th Gen Intel® Core™ processors, thus easing up application migration across Intel® 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® 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® 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

Technology	x86
Formfactor	SMARC™ 2.1.1 Short Size
CPU	<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>
Chipset	Integrated in SOC
RAM	Up to 16GB LPDDR5 SDRAM, up to 4800MT/s, IB ECC, soldered
Flash	Up to 256GB eMMC V5.1 Flash, soldered (optional)
Storage Interfaces	1x SATA-III 6Gbps
USB	2x USB 3.1 Host interfaces 6x USB 2.0 Host interfaces
Serial Interfaces	4x UART (two with handshake)
Bus Interfaces	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
Display Controller	<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>
Display Interfaces	<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>
Network Interface	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
Audio Interface	High Definition Audio and I2S Audio or 2x I2S Audio

Security Device	Infineon Trusted Platform Module 2.0
Miscellaneous	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
Feature Highlights	SMARC™ 2.1.1 compliant
Firmware	AMI Aptio UEFI
OS Support	Windows 10 IoT Enterprise 2021 LTSC Yocto Project (LTS kernel 2021)
Power Requirement	+5V +/-5% +5V Standby
Environment	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)
Dimensions	82 x 50 mm
Certificates	UL / CE
Cooling	Heatspreader Heatsink
Carrier	MSC SM2-MB-EP1

Order Reference - MSC SM2S-ASL

Order Number	Description	Reference	Cat*
114189	SMARC 2.1.1 module with Intel Atom x7835RE, Octa-Core (1.3GHz), 12W, TCC, 16GB LPDDR5 (4800 MT/s), 32EU, 32GB eMMC, no PCIe4, PCIe/SGMII on PCIe_D, SATA, 2x 2.5GbE LAN, 2x USB 3.1, 6x USB 2.0, TPM 2.0, eDP, IUC (Industrial use conditions), industrial temperature -40°C...+85°C	MSC SM2S-ASL-x7835RE-45N01911 PCBFTX	PV
114191	SMARC 2.1.1 module with Intel Atom x7433RE, Quad-Core (1.5GHz), 9W, TCC, 8GB LPDDR5 (4800 MT/s), 32EU, 32GB eMMC, PCIe4, no SATA, 2x 2.5GbE LAN, 2x USB 3.1, 6x USB 2.0, TPM 2.0, LVDS, IUC (Industrial use conditions), industrial temperature -40°C...+85°C	MSC SM2S-ASL-x7433RE-35N02811 PCBFTX	PV
114193	SMARC 2.1.1 module with Intel Atom x7213RE, Dual-Core (2.0GHz), 9W, TCC, 8GB LPDDR5 (4800 MT/s), 16EU, 16GB eMMC, no PCIe4, PCIe/SGMII on PCIe_D, SATA, 2x 2.5GbE LAN, 2x USB 3.1, 6x USB 2.0, TPM 2.0, LVDS, IUC (Industrial use conditions), industrial temperature -40°C...+85°C	MSC SM2S-ASL-x7213RE-34N02911 PCBFTX	PV
114195	SMARC 2.1.1 module with Intel Atom x7211RE, Dual-Core (1.0GHz), 6W, TCC, 4GB LPDDR5 (4800 MT/s), 16EU, 16GB eMMC, no PCIe4, PCIe/SGMII on PCIe_D, SATA, 2x 2.5GbE LAN, 2x USB 3.1, 6x USB 2.0, TPM 2.0, LVDS, IUC (Industrial use conditions), industrial temperature -40°C...+85°C	MSC SM2S-ASL-x7211RE-24N02911 PCBFTX	PV
114197	SMARC 2.1.1 module with Intel Atom x7203C, Dual-Core (2.0GHz), 9W, TCC, 4GB LPDDR5 (4800 MT/s), 16GB eMMC, no PCIe4, PCIe/SGMII on PCIe_D, SATA, 2x 2.5GbE LAN, 2x USB 3.1, 6x USB 2.0, TPM 2.0, no Graphics, EUC (Embedded use conditions), commercial temperature 0°C...+60°C	MSC SM2S-ASL-x7203C-24N0N91C PCBFTX	OR

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

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