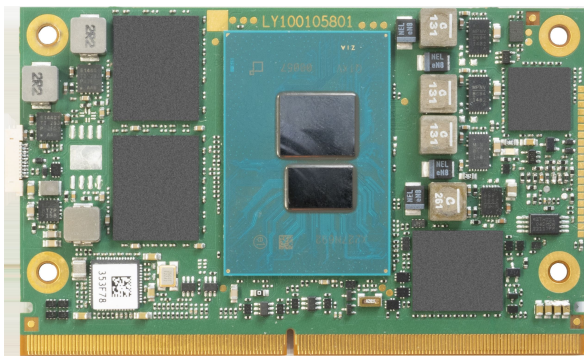




MSC SM2S-ALN

Intel Atom[®] processors x7000E
Intel[®] Core™ i3 processor
Intel[®] Processors N Series



 82 x 50 mm

 8 / 17 W

 0 +60 °C



Description

The new MSC SM2S-ALN module features the Intel Atom[®] processors x7000E Series, Intel[®] Core™ i3 processor and Intel[®] Processors N Series (codenamed “Alderlake N”). 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 new MSC SM2S-ALN 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-ALN offers 2 Gigabit Ethernet based on Intel[®] i226 and supports up to 2.5GbE bandwidth.

For evaluation and design-in of the MSC SM2S-ALN 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 15W
- Integrated Intel UHD Gen.12 graphics, max. 32 executing units
- Up to 16GB LPDDR5 SDRAM IB ECC (only Atom SKU's)
- 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 Gigabit Ethernet (Intel[®] i226)
- 1x SGMII Interface on PCIE-D (opt. only Atom SKU's)
- UART, SPI, I2C, SMBus
- HD/I2S Audio
- Trusted Platform Module
- SMARC 2.1.1 compliant
- UEFI Firmware

Technical Data - MSC SM2S-ALN

Technology	x86
Formfactor	SMARC™ 2.1.1 Short Size
CPU	<p>Intel® Core™ i3-N305, eight-core, 1.0GHz/1.8GHz, 32EU, 9/15W, PUC Intel Atom® x7425E, four-core, 1.5GHz, 24EU, TCC, 12W, EUC Intel Atom® x7213E, two-core, 1.7GHz, 16EU, TCC, 10W, EUC Intel Atom® x7211E, two-core, 1.0GHz, 16EU, TCC, 6W, EUC Intel® Processor N200, quad-core, 1.0GHz, 32EU, 6W, PUC Intel® Processor N97, quad-core, 2.0GHz, 24EU, 12W, PUC Intel® Processor N50, dual-core, 1.0GHz, 16EU, 6W, PUC</p> <p>EUC - Intel Embedded Use Conditions PUC - Intel PC Client Use Conditions</p>
Chipset	Integrated in SOC
RAM	Up to 16GB LPDDR5 SDRAM, up to 4800MT/s, IB ECC (only Atom SKU's), soldered
Flash	Up to 256GB eMMC V5.1 Flash, soldered (optional)
Storage Interfaces	1x SATA-III 6Gbps
USB	<p>2x USB 3.1 Host interfaces 6x USB 2.0 Host interfaces</p>
Serial Interfaces	4x UART (two with handshake)
Bus Interfaces	<p>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</p>
Display Controller	<p>Integrated Intel UHD Graphics (Gen12) Up to 32 execution units (EU)</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 1920 x 1080 @ 60Hz (optional)</p>
Network Interface	<p>2x 10/100/1000Base-T, up to 2.5G based on Intel i226 1x SGMII Interface on PCIE-D (opt. only Atom SKU's)</p>
Audio Interface	<p>High Definition Audio and I2S Audio or 2x I2S Audio</p>
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) -20° ... 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-ALN

Order Number	Description	Reference	Cat*
114166	SMARC 2.1.1 module with Intel Core i3-N305, Octa-Core (1.0/1.8GHz), 9-15W, 16GB LPDDR5 (4800MT/s), no eMMC, 4x PCIe1, SATA, 2x 2.5GbE LAN, 2x USB 3.1, 6x USB 2.0 Host, TPM 2.0, LVDS, PUC (PC Client Use Conditions), standard temperature 0...+60°C	MSC SM2S-ALN-N305-4NN0291C PCBFTX	PV
114170	SMARC 2.1.1 module with Intel Processor N97, Quad-core (2.0 GHz), 12W, 8GB LPDDR5 (4800MT/s), 32GB eMMC, 4x PCIe1, SATA, 2x 2.5GbE LAN, 2x USB 3.1, 6x USB 2.0 Host, TPM 2.0, LVDS, PUC (PC Client Use Conditions), standard temperature 0...+60°C	MSC SM2S-ALN-N97-35N0291C PCBFTX	PV
114168	SMARC 2.1.1 module with Intel Processor N50, Dual-core (1.0 GHz), 6W, 4GB LPDDR5 (4800MT/s), 16GB eMMC, 4x PCIe1, SATA, 2x 2.5GbE LAN, 2x USB 3.1, 6x USB 2.0 Host, TPM 2.0, LVDS, PUC (PC Client Use Conditions), standard temperature 0...+60°C	MSC SM2S-ALN-N50-24N0291C PCBFTX	PV
114186	SMARC 2.1.1 module with Intel Atom x7425E, Quad-Core (1.5 GHz), 12W, TCC, 16GB LPDDR5 (4800MT/s), no eMMC, PCIe4, no SATA, 2x 2.5GbE LAN, 2x USB 3.1, 6x USB 2.0 Host, TPM 2.0, LVDS, EUC (Embedded use conditions), standard temperature 0...+60°C	MSC SM2S-ALN-x7425E-4NN0281C PCBFTX	PV
114184	SMARC 2.1.1 module with Intel Atom x7213E, Dual-Core (1.7 GHz), 10W, TCC, 4GB LPDDR5 (4800MT/s), 16GB eMMC, no PCIe4, PCIe/SGMII on PCIe_D, SATA, 2x 2.5GbE LAN, 2x USB 3.1, 6x USB 2.0 Host, TPM 2.0, LVDS, EUC (Embedded use conditions), standard temperature 0...+60°C	MSC SM2S-ALN-x7213E-24N0291C PCBFTX	PV
114182	SMARC 2.1.1 module with Intel Atom x7211E, Dual-Core (1.0 GHz), 6W, TCC, 4GB LPDDR5 (4800MT/s), 16GB eMMC, no PCIe4, PCIe/SGMII on PCIe_D, SATA, 2x 2.5GbE LAN, 2x USB 3.1, 6x USB 2.0 Host, TPM 2.0, LVDS, EUC (Embedded use conditions), standard temperature 0...+60°C	MSC SM2S-ALN-x7211E-24N0291C PCBFTX	PV

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

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