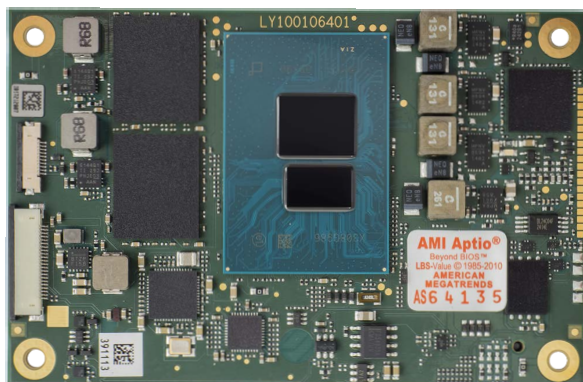



MSC C10M-ASL

Intel® Atom processors
x7000RE/C Series



COM 
Express

intel

 84 x 55

 8 / 14W

 -45 +85

Description

The MSC C10M-ASL features the Intel® Atom® Processor x7000RE/C Series. With support for up to eight processor cores, the module fits to a wide range of applications including automation, 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 C10M-ASL offers dual independent display support with a maximum of 4k resolution, fast LPDDR5 memory with up to 16GB and IB ECC capabilities, eMMC 5.1, USB 3.2 Gen 2 (10Gb/s) and PCIe Gen3 on a power saving and cost-efficient COM Express mini module.

Different SOCs with dual-, quad- and eight-core processors are supported by this design. The RE-CPU's have a powerful GPU whereas the C-CPU's are designed for headless applications. In addition to an extensive set of interfaces and features, the MSC C10M-ASL offers Gigabit Ethernet based on Intel® i226 and supports up to 2.5GbE bandwidth.

System investments are well protected through long-term availability of the module, designed, and manufactured by Avnet Embedded. The COM Express standard enables performance scaling and migrating applications to future technology upgrades when they become available.

Highlights

- Up to eight processing cores
- Power efficient processors, TDP 6 to 14W
- Integrated Intel UHD Gen.12 graphics, max. 32 executing units
- SKUs without GPU (headless) available
- Up to 16GB LPDDR5 SDRAM with IB ECC
- Up to 256GB eMMC 5.1 Flash (optional)
- 2x SATA-III interface (6Gbps)
- DisplayPort/HDMI/DVI interface
- LVDS/Embedded DisplayPort interface
- Dual Independent Display support
- MIPI-CSI Camera Interface
- 4x PCI Express x1 Gen. 3
- Two USB 3.2 Gen 2 (10Gb/s) and eight USB 2.0 interfaces
- One Gb Ethernet port (Intel® i226)
- TSN, TCC support
- UART, SPI, I2C, SMBus
- High Definition Audio (HD-A)
- UEFI Firmware
- Trusted Platform Module TPM 2.0

Technical Data - MSC C10M-ASL

Technology	x86
Formfactor	COM Express Mini
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	SOC
RAM	Up to 16GB LPDDR5 SDRAM, up to 4800MT/s, IB ECC
Flash	On-board eMMC mass storage option, scalable capacity up to 256GB
Storage Interfaces	2x SATA 6Gb/s
USB	2x USB 3.2 Gen 2 (10Gb/s) 8 x USB 2.0
Serial Interfaces	Two UARTS
Bus Interfaces	4x PCI Express x1 Gen 3 (1x PCI Express x4 Gen 3 on request), LPC bus (Low Pin Count bus; no DMA support) (eSPI on request)
Display Controller	<p>Integrated Intel UHD Graphics (Gen12) Up to 32 execution units (EU)</p> <p>SKUs without GPU (headless) available</p>
Display Interfaces	Two independent displays supported: 1x Digital Display Interface (DP, HDMI) 1x Embedded DisplayPort (on variants without LVDS only); LVDS 24bit, single-channel (not on all variants); max. 1920 x 1200 @ 60Hz
Network Interface	10/100/1000Base-TX, 2.5G ² based on Intel i226 ² Available bandwidths depending on carrier design
Audio Interface	High Definition Audio (HD-A)
Security Device	TPM 2.0
Miscellaneous	<p>Watchdog Timer: Initiates system reset RTC battery: external System Monitoring: voltage, temperature, system fan GPIO, GSPI (COM.0 Rev. 3.1)</p>

Feature Highlights	Type 10 pin-out
Firmware	AMI Aptio UEFI
OS Support	Windows 10 IoT Enterprise 2021 LTSC Yocto Project (LTS kernel 2021)
Power Requirement	Wide range input +5 ... +20V, 5V Stby optional, 8W (typ.) up to 14W (typ.)
Environment	Temperature Range: -40° ... 85°C (operating), -25° ... 85°C (storage) Humidity: 5 ... 95% (operating, non-condensing), 5 ... 95% (storage, non-condensing)
Dimensions	84mm x 55mm
Certificates	UL / CE
Cooling	Passive heat sink Heat spreader with threaded or non-threaded standoffs
Carrier	Small carrier board (Mini-ITX) as part of a starter kit;

Order Reference - MSC C10M-ASL

Order Number	Description	Reference	Cat*
112862	COM Express Type 10 Mini module (84mm x 55mm); CPU: Intel Atom x7835RE octal-core 1.3GHz, 12W TDP; Graphics: Intel UHD; DP/HDMI and LVDS interfaces; 32EU; Ethernet: 1Gbit; 16GB LPDDR5 SDRAM, in-band ECC; 32GB eMMC; HD audio; TPM 2.0; 2x SATA, 2x USB3/2, 6x USB2, 2x UART; 4x PCIe x1; -40 ... +85°C (recommended for 24/7 operation) (Engineering Sample - get in touch with your sales representative)	MSC C10M-ASL-x7835RE-452011 DV1 PCBES	OR
112861	COM Express Type 10 Mini module (84mm x 55mm); CPU: Intel Atom x7835RE octal-core 1.3GHz, 12W TDP; Graphics: Intel UHD; DP/HDMI and eDP interfaces; 32EU; Ethernet: 1Gbit; 8GB LPDDR5 SDRAM, in-band ECC; 16GB eMMC; HD audio; TPM 2.0; 2x SATA, 2x USB3/2, 6x USB2, 2x UART; 4x PCIe x1; -40 ... +85°C (recommended for 24/7 operation) (Engineering Sample - get in touch with your sales representative)	MSC C10M-ASL-x7835RE-341011 DV1 PCBES	OR
TBD 3	COM Express Type 10 Mini module (84mm x 55mm); CPU: Intel Atom x7433RE quad-core 1.5GHz, 9W TDP; Graphics: Intel UHD; DP/HDMI and LVDS interfaces; 32EU; Ethernet: 1Gbit; 8GB LPDDR5 SDRAM, in-band ECC; 16GB eMMC; HD audio; TPM 2.0; 2x SATA, 2x USB3/2, 6x USB2, 2x UART; 4x PCIe x1; -40 ... +85°C (recommended for 24/7 operation) (Engineering Sample - get in touch with your sales representative)	MSC C10M-ASL-x7433RE-342011 DV1 PCBES	OR
112860	COM Express Type 10 Mini module (84mm x 55mm); CPU: Intel Atom x7433RE quad-core 1.5GHz, 9W TDP; Graphics: Intel UHD; DP/HDMI and eDP interfaces; 32EU; Ethernet: 1Gbit; 8GB LPDDR5 SDRAM, in-band ECC; 16GB eMMC; HD audio; TPM 2.0; 2x SATA, 2x USB3/2, 6x USB2, 2x UART; 4x PCIe x1; -40 ... +85°C (recommended for 24/7 operation) (Engineering Sample - get in touch with your sales representative)	MSC C10M-ASL-x7433RE-341011 DV1 PCBES	OR
112859	COM Express Type 10 Mini module (84mm x 55mm); CPU: Intel Atom x7213RE dual-core 2.0GHz, 9W TDP; Graphics: Intel UHD; DP/HDMI and LVDS interfaces; EU; Ethernet: 1Gbit; 8GB LPDDR5 SDRAM, in-band ECC; 16GB eMMC; HD audio; TPM 2.0; 2x SATA, 2x USB3/2, 6x USB2, 2x UART; 4x PCIe x1; -40 ... +85°C (recommended for 24/7 operation) (Engineering Sample - get in touch with your sales representative)	MSC C10M-ASL-x7213RE-342011 DV1 PCBES	OR
TBD 6	COM Express Type 10 Mini module (84mm x 55mm); CPU: Intel Atom x7213RE dual-core 2.0GHz, 9W TDP; Graphics: Intel UHD; DP/HDMI and eDP interfaces; EU; Ethernet: 1Gbit; 4GB LPDDR5 SDRAM, in-band ECC; 16GB eMMC; HD audio; TPM 2.0; 2x SATA, 2x USB3/2, 6x USB2, 2x UART; 4x PCIe x1; -40 ... +85°C (recommended for 24/7 operation) (Engineering Sample - get in touch with your sales representative)	MSC C10M-ASL-x7213RE-241011 DV1 PCBES	OR
112858	COM Express Type 10 Mini module (84mm x 55mm); CPU: Intel Atom x7211RE dual-core 1.0GHz, 6W TDP; Graphics: Intel UHD; DP/HDMI and LVDS interfaces; EU; Ethernet: 1Gbit; 4GB LPDDR5 SDRAM, in-band ECC; 16GB eMMC; HD audio; TPM 2.0; 2x SATA, 2x USB3/2, 6x USB2, 2x UART; 4x PCIe x1; -40 ... +85°C (recommended for 24/7 operation) (Engineering Sample - get in touch with your sales representative)	MSC C10M-ASL-x7211RE-242011 DV1 PCBES	OR

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

Order Reference - MSC C10M-ASL

Order Number	Description	Reference	Cat*
TBD 8	COM Express Type 10 Mini module (84mm x 55mm); CPU: Intel Atom x7211RE dual-core 1.0GHz, 6W TDP; Graphics: Intel UHD; DP/HDMI and eDP interfaces; EU; Ethernet: 1Gbit; 4GB LPDDR5 SDRAM, in-band ECC; no eMMC; HD audio; TPM 2.0; 2x SATA, 2x USB3/2, 6x USB2, 2x UART; 4x PCIe x1; -40 ... +85°C (recommended for 24/7 operation) (Engineering Sample - get in touch with your sales representative)	MSC C10M-ASL-x7211RE-2N1011 DV1 PCBES	OR
TBD9	COM Express Type 10 Mini module (84mm x 55mm); CPU: Intel Atom x7203C dual-core 2.0GHz, 9W TDP; Graphics: no; Ethernet: 1Gbit; 4GB LPDDR5 SDRAM, in-band ECC; 16GB eMMC; HD audio; TPM 2.0; 2x SATA, 2x USB3/2, 6x USB2, 2x UART; 4x PCIe x1; 0 ... +60°C (Engineering Sample - get in touch with your sales representative)	MSC C10M-ASL-x7203C-24N01C DV1 PCBES	OR
TBD10	COM Express Type 10 Mini module (84mm x 55mm); CPU: Intel Atom x7405C quad-core 2.2GHz, 12W TDP; Graphics: no; Ethernet: 1Gbit; 8GB LPDDR5 SDRAM, in-band ECC; 16GB eMMC; HD audio; TPM 2.0; 2x SATA, 2x USB3/2, 6x USB2, 2x UART; 4x PCIe x1; 0 ... +60°C (Engineering Sample - get in touch with your sales representative)	MSC C10M-ASL-x7405C-34N01C DV1 PCBES	OR

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

Accessories

Order Number	Description	Reference
Cooling Options		
110195	Passive Heatsink for C10M-ALN & C10M-ASL (all versions), consisting of a single-piece aluminum pin cooler, standoffs without thread (2.7mm inner diameter) and thermopad for the thermal contact to SOC. With threaded mounting holes for an optional fan.	MSC C10M-ALN-01 HSI-001
110196	Heatspreader for C10M-ALN & C10M-ASL (all versions). Single-piece aluminum profile, standoffs without thread (2.7mm inner diameter) and thermopad for the thermal contact to SOC.	MSC C10M-ALN-01 HSP-001
110197	Heatspreader for C10M-ALN & C10M-ASL (all versions). Single-piece aluminum profile, standoffs with M2.5 thread and thermopad for the thermal contact to SOC.	MSC C10M-ALN-02 HSP-001

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