MSC C6C-ASL

Intel Atom® Processor
x7000RE/C Series
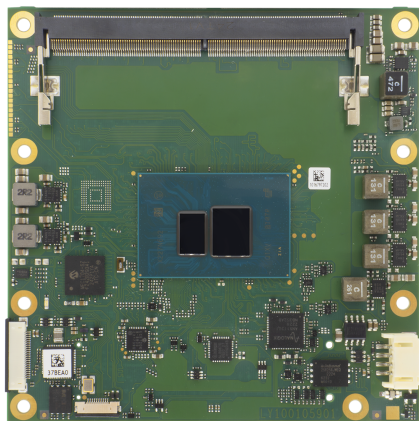
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	tbd
	-40 +85

intel.

COM ✦ Express

Description

The MSC C6C-ALS 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 MSC C6C-ASL can drive up to three independent displays with a maximum of 4k resolution. The COM Express Type 6 interface allows direct access to digital display interfaces including DisplayPort, HDMI, and a choice of LVDS versus eDP. With a maximum capacity of 16GB fast DDR5 memory the board satisfies even demanding applications. The In-band ECC capability protects code and data kept in memory. High speed IO includes up to six PCIe Gen 3 lanes and up to four USB 3.2 interfaces. Mass storage is provided with the optional on-board eMMC memory and externally accessible via up to two SATA channels. The network interface based on the Intel® i226 supports up to 2.5GbE bandwidth.

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

Highlights

- COM Express Type 6, Compact module
- Intel Atom® Processor x7000RE/C Series
- Up to eight processing cores
- Power efficient processors, TDP 6 to 15W
- Integrated Intel UHD graphics, max. 32 executing units
- Up to 16GB DDR5-4800 SDRAM
- In-band ECC
- Up to two SATA 6Gb/s mass storage interfaces
- eMMC mass storage option
- DisplayPort/HDMI interface
- LVDS/Embedded DisplayPort interface
- Three independent displays supported
- Up to four USB 3.2 Gen2 (10Gb/s) and eight USB 2.0 interfaces
- Two UARTs

- Up to six PCI Express™ x1 lanes
- 1 / 2.5 Gb Ethernet port (Intel® i226)
- MIPI CSI camera interface
- TSN, TCC support
- UEFI Firmware
- Trusted Platform Module TPM 2.0
- Extended temperature range
- Long-term product availability

COM Express Type 6

∧VNET® EMBEDDED

Technical Data - MSC C6C-ASL

Technology	x86
Formfactor	COM Express Compact
CPU	Intel Atom® x7835RE, eight-core, 1.3GHz, 32EU, TCC, 12W, IUC, ET Intel Atom® x7433RE, four-core, 1.5GHz, 32EU, TCC, 9W, IUC, ET Intel Atom® x7213RE, two-core, 2.0GHz, 16EU, TCC, 9W, IUC, ET Intel Atom® x7211RE, two-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 Note: base frequency shown, other frequencies supported ET- Extended temperature CT- Commercial temperature EUC - Intel Embedded Use Conditions IUC - Intel Industrial Use Conditions
Chipset	SOC
RAM	1x 262-pin SO-DIMM socket for up to 16 GB DDR5-4800 In-band ECC
Flash	On-board eMMC mass storage option, scalable capacity up to 256GB
Storage Interfaces	Up to 2x SATA 6Gb/s
USB	Up to 4x USB 3.2 Gen2 (10Gb/s) 8x USB 2.0
Serial Interfaces	Two UARTS
Bus Interfaces	Up to 6x PCI Express x1 Gen 3, up to 5 root ports LPC bus (Low Pin Count bus; no DMA support)
Display Controller	Integrated Intel® UHD graphics Up to 32 execution units (EU)
Display Interfaces	Three independent displays supported: 2x Digital Display Interface (DP, HDMI) 1x Embedded DisplayPort (on variants without LVDS only); LVDS 24bit, dual-channel (not on all variants); max. 1920 x 1200 @ 60Hz Note: display interfaces are only available with the Intel Atom Processor x7000RE Series
Network Interface	10/100/1000Base-TX, 2.5G[1] based on Intel i226-IT, with TSN support [1] Available bandwidths depending on carrier design
Audio Interface	High Definition Audio
Security Device	TPM 2.0

Miscellaneous	2x MIPI CSI camera interface (optional) Watchdog Timer: Initiates system reset, programmable Fan Supply: 4-pin header for CPU fan, PWM speed controlled and PWM speed control for system fan supported RTC battery: external System Monitoring: voltage, temperature, CPU fan, system fan
Feature Highlights	Type 6 pin-out
Firmware	AMI Aptio UEFI
OS Support	Windows 10 IoT Enterprise 2021 LTSC Yocto Project (LTS kernel 2021)
Power Requirement	Wide range input +8.5 … +20V, 5V Stby optional, tbd W (typ.)
Environment	Ambient Temperature: 0° … 60°C (operating) -25° … 85°C (storage) Extended temp. variants: -40 ... +85°C (operating) Humidity: 5 … 95% (operating, non-condensing), 5 … 95% (storage, non-condensing)
Dimensions	95mm x 95mm
Certificates	UL / CE
Cooling	Passive heat sink Active heat sink with fan Heat spreader with threaded or non-threaded standoffs
Carrier	Small carrier board (Mini-ITX) as part of a starter kit; Evaluation board in ATX form factor

COM Express Type 6

Order Reference - MSC C6C-ASL

Order Number	Description	Reference	Cat*
tbd	COM Express Type 6 Compact module (95mm x 95mm); CPU: Intel Atom x7835RE 8C, 1.3GHz, 12W TDP; Graphics: Intel® UHD Graphics 32 EUs; 2x DP/HDMI; 1x LVDS; Ethernet: Intel i226-IT Gbit; HD audio; TPM 2.0; eMMC 32GB; 2x SATA, 4x USB3, 8x USB2, 2x PCIe Gen 3, 2x CSI; 1x socket for DDR5 SO-DIMM; -40...+85°C (recommended for 24/7 operation)	MSC C6C-ASL-X7835RE-N52V1I PCBFTX	OR
tbd	COM Express Type 6 Compact module (95mm x 95mm); CPU: Intel Atom x7835RE 8C, 1.3GHz, 12W TDP; Graphics: Intel® UHD Graphics 32 EUs; 2x DP/HDMI; 1x LVDS; Ethernet: Intel i226-IT Gbit; HD audio; TPM 2.0; 2x SATA, 2x USB3, 8x USB2, 4x PCIe Gen 3; 1x socket for DDR5 SO-DIMM; -40...+85°C (recommended for 24/7 operation)	MSC C6C-ASL-X7835RE-NN231I PCBFTX	OR
tbd	COM Express Type 6 Compact module (95mm x 95mm); CPU: Intel Atom x7433RE 4C, 1.5GHz, 9W TDP; Graphics: Intel® UHD Graphics 32 EUs; 2x DP/HDMI; 1x LVDS; Ethernet: Intel i226-IT Gbit; HD audio; TPM 2.0; 2x SATA, 4x USB3, 8x USB2, 2x PCIe Gen 3; 1x socket for DDR5 SO-DIMM; -40...+85°C (recommended for 24/7 operation)	MSC C6C-ASL-X7433RE-NN2F1I PCBFTX	OR
tbd	COM Express Type 6 Compact module (95mm x 95mm); CPU: Intel Atom x7433RE 4C, 1.5GHz, 9W TDP; Graphics: Intel® UHD Graphics 32 EUs; 2x DP/HDMI; 1x LVDS; Ethernet: Intel i226-IT Gbit; HD audio; TPM 2.0; 2x SATA, 2x USB3, 8x USB2, 4x PCIe Gen 3; 1x socket for DDR5 SO-DIMM; -40...+85°C (recommended for 24/7 operation)	MSC C6C-ASL-X7433RE-NN231I PCBFTX	OR
tbd	COM Express Type 6 Compact module (95mm x 95mm); CPU: Intel Atom x7213RE 2C, 2.0GHz, 9W TDP; Graphics: Intel® UHD Graphics 16 EUs; 2x DP/HDMI; 1x LVDS; Ethernet: Intel i226-IT Gbit; HD audio; TPM 2.0; 2x SATA, 2x USB3, 8x USB2, 4x PCIe Gen 3; 1x socket for DDR5 SO-DIMM; -40...+85°C (recommended for 24/7 operation)	MSC C6C-ASL-X7213RE-NN231I PCBFTX	OR
tbd	COM Express Type 6 Compact module (95mm x 95mm); CPU: Intel Atom x7211RE 2C, 1.0GHz, 6W TDP; Graphics: Intel® UHD Graphics 16 EUs; 2x DP/HDMI; 1x LVDS; Ethernet: Intel i226-IT Gbit; HD audio; TPM 2.0; 2x SATA, 2x USB3, 8x USB2, 4x PCIe Gen 3; 1x socket for DDR5 SO-DIMM; -40...+85°C (recommended for 24/7 operation)	MSC C6C-ASL-X7211RE-NN231I PCBFTX	OR

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

Accessories

Order Number	Description	Reference
	Cooling Options	
98715	Passive Heatsink for C6C-ALN/ASL, consisting of a single-piece aluminum profile with fins, standoffs without thread (2.7mm inner diameter), screws and thermopad for the thermal contact to SOC.	MSC C6C-ALN-01 HSI-001
98716	Heatspreader for C6C-ALN/ASL. Single-piece aluminum profile with standoffs without thread (2.7mm inner diameter), screws and thermopad for the thermal contact to SOC.	MSC C6C-ALN-01 HSP-001
98717	Heatspreader for C6C-ALN/ASL. Single-piece aluminum profile with threaded standoffs (M2.5), screws and thermopad for the thermal contact to SOC.	MSC C6C-ALN-02 HSP-001
79809	Fan kit for Heatsink MSC HCA-ALP/RLP-0x HSI-xxx, MSC C6B-ALP/RLP-0x HSI-xxx, MSC C6B-TLH-0x HSI-xxx, MSC C6C-ALP/RLP-0x HSI-xxx, MSC C6C-TLU-0x HSI-xxx, MSC C6C-WLU-0x HSI-xxx, MSC C6C-ALN/ASL-0x HSI-xxx, MSC C6C-EL-0x HSI-xxx, MSC C6C-RYZx-0x HSI-xxx, PWM fan 80x80x15mm.	MSC C6C-FANKIT-01-HSF-001