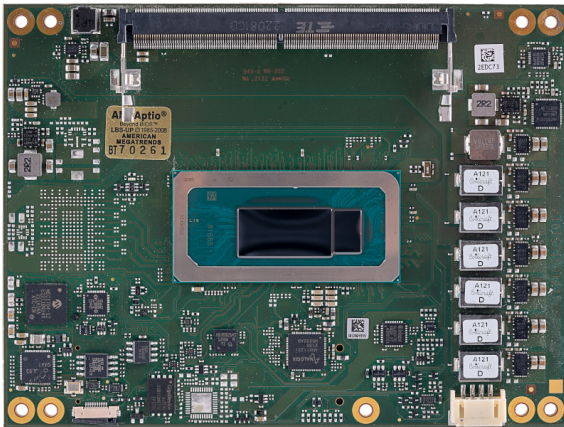


MSC C6B-ALP

Intel® Core™ 12th Generation



125 x 95



tbd



0 +60



IoT Solutions Alliance

COM Express

Description

The MSC C6B-ALP COM Express module features the 12th Gen Intel® Core™ processor, giving application designers a great variety of choices of power efficient and performant compute solutions. Offering a great scalability of performance the module is ideal for compute intense applications in medical, transportation, video surveillance and gaming. The new Intel® performance hybrid architecture combines Performance-cores and Efficient-cores with the Intel® Thread Director providing intelligent workload optimization. The architecture scales up to fourteen cores and twenty threads at 45/35W thermal design power (TDP). For applications with need for lower power dissipation, selected processor variants can be operated down to 12W TDP.

For highest data throughput the module enables fast DDR5-4800 memory technology. Up to two SO-DIMMs can be installed for a total memory capacity from eight to sixty-four GB. I/O located on COM Express carrier designs can be connected to the module via eight PCIe lanes (mix of Gen 4/3) and an eight lane PEG port capable of PCIe Gen 4. The Ethernet interface provides up to 2.5GbE bandwidth based on the Intel i226 network controller.

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

- 12th Gen Intel® Core™ processors
- Scalable CPU performance
- Up to fourteen cores, twenty threads
- Up to 64GB DDR5-4800 SDRAM, dual channel
- Intel® Iris® Xe architecture Graphics, up to 96 EUs
- Three DisplayPort/HDMI interfaces
- LVDS and Embedded DisplayPort interface
- Up to four independent displays
- PCI Express® 4x1 lanes, configurable up to x4, Gen 3, PCI Express® 1x4, Gen 4
- PEG 1x8, PCIe Gen 4 (optional)
- Four USB 3.2 Gen1/2 and eight USB 2.0 ports
- Two UARTs
- Optional on-board NVMe SSD, up to 1TB
- Two SATA 6Gb/s mass storage interfaces
- 1 / 2.5 Gb Ethernet port (Intel® i226)
- Trusted Platform Module TPM 2.0
- Long-term product availability

Technical Data - MSC C6B-ALP

Technology	x86
Formfactor	COM Express Basic
CPU	<p>12th Gen Intel® Core™ processors</p> <p>H-series</p> <p>Intel® Core™ i7-12800HE 6P+8E/20T, 2.4GHz, 96 EUs, 24MB L3, 45/35W cTDP</p> <p>Intel® Core™ i5-12600HE 4P+8E/16T, 2.5GHz, 80 EUs, 18MB L3, 45/35W cTDP</p> <p>Intel® Core™ i3-12300HE 4P+4E/12T, 1.9GHz, 48 EUs, 12MB L3, 45/35W cTDP</p> <p>P-series</p> <p>Intel® Core™ i7-1270PE 4P+8E/16T, 1.8GHz, 96 EUs, 24MB L3, 28/20W cTDP</p> <p>Intel® Core™ i5-1250PE 4P+8E/16T, 1.7GHz, 80 EUs, 12MB L3, 28/20W cTDP</p> <p>Intel® Core™ i3-1220PE 4P+4E/12T, 1.5GHz, 48 EUs, 12MB L3, 28/20W cTDP</p> <p>U-series</p> <p>Intel® Core™ i7-1265UE 2P+8E/12T, 1.7GHz, 96 EUs, 12MB L3, 15/12W cTDP</p> <p>Intel® Core™ i5-1245UE 2P+8E/12T, 1.5GHz, 80 EUs, 12MB L3, 15/12W cTDP</p> <p>Intel® Core™ i3-1215UE 2P+4E/8T, 1.2GHz, 64 EUs, 10MB L3, 15/12W cTDP</p> <p>Intel® Celeron® 7305E 1P+4E/5T, 1.0GHz, 48 EUs, 8MB L3, 15/12W cTDP</p> <p>Note: P core base frequency at nominal TDP shown, other clock frequencies supported</p>
Chipset	Integrated into SoC
RAM	2x 262-pin SO-DIMM socket for up to 2x 32GB DDR5 SDRAM (DDR5-4800); dual channel operation; minimum capacity 1x 8GB single channel operation
Storage Interfaces	2x SATA channels (up to 6Gb/s) optional on-board NVMe, 64GB to 1TB
USB	4x USB 3.2 (Gen 1 & 2), 8x USB 2.0
Serial Interfaces	2x high-speed serial ports
Bus Interfaces	<p>PCI Express® Graphics (PEG) Gen 4, 1x8, on COMe PEG[0:7]¹</p> <p>PCI Express® Gen 4, 1x4, on COMe PCIe[4:7]</p> <p>PCI Express® Gen 3, 1x4, flexible bifurcation options, on COMe PCIe[0:3]</p> <p>LPC bus (Low Pin Count bus, no DMA support)</p> <p>¹ Available on H-series processors</p>
Display Controller	Intel® Iris® Xe architecture Graphics, Up to 96 execution units (EU) H.264/AVC, H.265/HEVC, AV1, MJPEG encode/decode/transcode.
Display Interfaces	<p>Four independent displays supported</p> <p>3x Digital Display Interface (DP 1.4a, HDMI 2.0b)</p> <p>1x Embedded DisplayPort 1.4b</p> <p>1x LVDS 24bit, dual-channel;</p>
Network Interface	10/100/1000Base-TX, 2.5G ² based on Intel i226-LM ² Available bandwidths depending on carrier design
Audio Interface	High Definition Audio

Security Device	TPM 2.0
Miscellaneous	<p>Watchdog Timer: Initiates system reset, programmable</p> <p>Fan Supply: 4-pin header for CPU fan, PWM speed controlled and PWM speed control for system fan supported</p> <p>RTC battery: external</p> <p>System Monitoring: voltage, temperature, CPU fan, system fan</p>
Feature Highlights	Type 6 pin-out
Firmware	<p>UEFI Firmware: AMI Aptio® V</p> <p>Security: TPM 2.0 support, TCG compliant</p> <p>Power Management: ACPI Active fan control</p> <p>USB: USB legacy support (keyboard, mouse, storage)</p> <p>Monitoring: System Monitoring Health Monitoring</p> <p>MSC Adv. Boot Device Selection: Boot device priority setting based on physical interfaces</p>
OS Support	Windows 10 IoT Enterprise 2021 LTSC BSP for Linux (Yocto)
Power Requirement	<p>Voltage: +8.5V to +20V, +5V Stby optional</p> <p>Power Consumption: tbd W to tbd W (typ.)</p>
Environment	<p>Ambient Temperature: 0° ... 60°C (operating) -25° ... 85°C (storage)</p> <p>Humidity: 5 ... 95% (operating, non-condensing), 5 ... 95% (storage, non-condensing)</p>
Dimensions	125 x 95

Certificates

UL / CE

Order Reference - MSC C6B-ALP

Order Number	Description	Reference	Cat*
98864	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel i7-12800HE 14C/20T, 2.4GHz, 45/35W cTDP; Graphics: Intel® Iris® Xe 96 EUs; 3x DP/HDMI; 1x LVDS; 1x eDP; Ethernet: Intel i226-LM Gbit, TSN; HD audio; TPM 2.0; 2x SATA, 4x USB3, 8x USB2, PEG x8 Gen 4, PCIe Gen 4 1x4, PCIe Gen 3 4x1; 2x socket for DDR5; 0...+60°C.	MSC C6B-ALP-12800HE-NN0301C PCBFTX	OR
98858	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel i5-12600HE 12C/16T, 2.5GHz, 45/35W cTDP; Graphics: Intel® Iris® Xe 80 EUs; 3x DP/HDMI; 1x LVDS; 1x eDP; Ethernet: Intel i226-LM Gbit, TSN; HD audio; TPM 2.0; 2x SATA, 4x USB3, 8x USB2, PEG x8 Gen 4, PCIe Gen 4 1x4, PCIe Gen 3 4x1; 2x socket for DDR5; 0...+60°C.	MSC C6B-ALP-12600HE-NN0301C PCBFTX	PV
98852	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel i3-12300HE 8C/12T, 1.9GHz, 45/35W cTDP; Graphics: Intel® UHD Graphics 48 EUs; 3x DP/HDMI; 1x LVDS; 1x eDP; Ethernet: Intel i226-LM Gbit, TSN; HD audio; TPM 2.0; 2x SATA, 4x USB3, 8x USB2, PEG x8 Gen 4, PCIe Gen 1x4, PCIe Gen 3 4x1; 2x socket for DDR5; 0...+60°C.	MSC C6B-ALP-12300HE-NN0301C PCBFTX	PV
98862	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel i7-1270PE 12C/16T, 1.8GHz, 28/20W cTDP; Graphics: Intel® Iris® Xe 96 EUs; 3x DP/HDMI; 1x LVDS; 1x eDP; Ethernet: Intel i226-LM Gbit, TSN; HD audio; TPM 2.0; 2x SATA, 4x USB3, 8x USB2, PCIe Gen 4 1x4, PCIe Gen 3 4x1; 2x socket for DDR5; 0...+60°C.	MSC C6B-ALP-1270PE-NN0301C PCBFTX	OR
98856	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel i5-1250PE 12C/16T, 1.7GHz, 28/20W cTDP; Graphics: Intel® Iris® Xe 80 EUs; 3x DP/HDMI; 1x LVDS; 1x eDP; Ethernet: Intel i226-LM Gbit, TSN; HD audio; TPM 2.0; 2x SATA, 4x USB3, 8x USB2, PCIe Gen 4 1x4, PCIe Gen 3 4x1; 2x socket for DDR5; 0...+60°C.	MSC C6B-ALP-1250PE-NN0301C PCBFTX	PV
98840	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel i3-1220PE 8C/12T, 1.5GHz, 28/20W cTDP; Graphics: Intel® UHD Graphics 48 EUs; 3x DP/HDMI; 1x LVDS; 1x eDP; Ethernet: Intel i226-LM Gbit, TSN; HD audio; TPM 2.0; 2x SATA, 4x USB3, 8x USB2, PCIe Gen 4 1x4, PCIe Gen 3 4x1; 2x socket for DDR5; 0...+60°C.	MSC C6B-ALP-1220PE-NN0301C PCBFTX	PV

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

Order Reference - MSC C6B-ALP

Order Number	Description	Reference	Cat*
98860	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel i7-1265UE 10C/12T, 1.7GHz, 15/12W cTDP; Graphics: Intel® Iris® Xe 96 EUs; 3x DP/HDMI; 1x LVDS; 1x eDP; Ethernet: Intel i226-LM Gbit, TSN; HD audio; TPM 2.0; 2x SATA, 4x USB3, 8x USB2, PCIe Gen 4 1x4, PCIe Gen 3 4x1; 2x socket for DDR5; 0...+60°C.	MSC C6B-ALP-1265UE-NN0301C PCBFTX	PV
98854	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel i5-1245UE 10C/12T, 1.5GHz, 15/12W cTDP; Graphics: Intel® Iris® Xe 80 EUs; 3x DP/HDMI; 1x LVDS; 1x eDP; Ethernet: Intel i226-LM Gbit, TSN; HD audio; TPM 2.0; 2x SATA, 4x USB3, 8x USB2, PCIe Gen 4 1x4, PCIe Gen 3 4x1; 2x socket for DDR5; 0...+60°C.	MSC C6B-ALP-1245UE-NN0301C PCBFTX	PV
110528	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel i3-1215UE 6C/8T, 1.2GHz, 15/12W cTDP; Graphics: Intel® UHD Graphics 64 EUs; 3x DP/HDMI; 1x LVDS; 1x eDP; Ethernet: Intel i226-LM Gbit, TSN; HD audio; TPM 2.0; 2x SATA, 4x USB3, 8x USB2, PCIe Gen 4 1x4, PCIe Gen 3 4x1; 2x socket for DDR5; 0...+60°C.	MSC C6B-ALP-1215UE-NN0301C PCBFTX	PV
98866	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel Celeron 7305E 5C/5T, 1.0GHz, 15/12W cTDP; Graphics: Intel® UHD Graphics 48 EUs; 3x DP/HDMI; 1x LVDS; 1x eDP; Ethernet: Intel i226-LM Gbit, TSN; HD audio; TPM 2.0; 2x SATA, 4x USB3, 8x USB2, PCIe Gen 4 1x4, PCIe Gen 3 4x1; 2x socket for DDR5; 0...+60°C.	MSC C6B-ALP-7305E-NN0301C PCBFTX	PV

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

Accessories

Order Number	Description	Reference
Cooling Options		
92019	Passive Heatsink for C6B-ALP and C6B-RLP consisting of a single-piece aluminum profile with fins, standoffs without thread (2.7mm inner diameter), screws and thermopads for the thermal contact to CPU, chipset, NVMe.	MSC C6B-ALP-01 HSI-001
92020	Passive Heatsink / heat pipe for C6B-ALP and C6B-RLP consisting of a single-piece aluminum profile with fins and embedded heatpipe, standoffs without thread (2.7mm inner diameter), screws and thermopads for the thermal contact to CPU, chipset, NVMe.	MSC C6B-ALP-01 HSI-HP-001
92021	Heatspreader for C6B-ALP and C6B-RLP. Single-piece aluminum profile, standoffs without thread (2.7mm inner diameter), screws and thermopads for the thermal contact to CPU, chipset, NVMe.	MSC C6B-ALP-01 HSP-001
92032	Heatspreader / heat pipe for C6B-ALP and C6B-RLP. Single-piece aluminum profile with embedded heat pipe, standoffs without thread (2.7mm inner diameter), screws and thermopad for the thermal contact to CPU, chipset, NVMe.	MSC C6B-ALP-01 HSP-HP-001
92033	Heatspreader for C6B-ALP and C6B-RLP. Single-piece aluminum profile, standoffs with M2.5 thread, screws and thermopads for the thermal contact to CPU, chipset, NVMe.	MSC C6B-ALP-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-0x HSI-xxx, MSC C6C-EL-0x HSI-xxx, MSC C6C-RYZx-0x HSI-xxx, PWM fan 80x80x15mm.	MSC C6C-FANKIT-01-HSF-001
Memory Options		
97208	16GB DDR5-4800 SO-DIMM	MOD SODIMM DDR5 16GB PC5-38400 CL22 1B
97209	32GB DDR5-4800 SO-DIMM	MOD SODIMM DDR5 32GB PC5-38400 CL22 2B
97207	8GB DDR5-4800 SO-DIMM	MOD SODIMM DDR5 8GB PC5-38400 CL22 1B

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