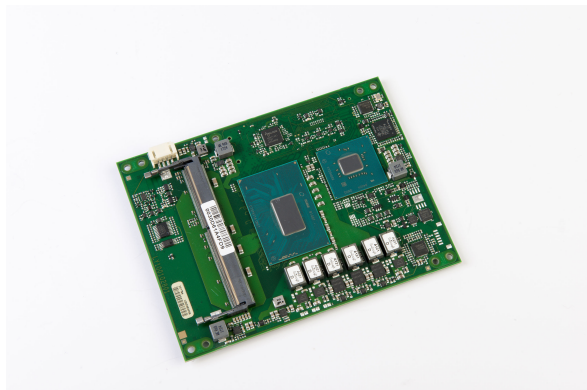





MSC C6B-CFLR

Intel® Core™ 9th Generation



 125 x 95

 25 / 55 W

 0 +60



COM Express

Description

The MSC C6B-CFLR module is based on the 9th Generation Intel® Core™ Processor family. The Intel two-chip solution allows highest performance in graphics and computing on a COM Express module in basic form factor.

The new MSC C6B-CFLR offers triple independent display support with up to 4k x 2k resolution, highest level graphics acceleration and hardware based video en-/decoding. Fast DDR4 memory with optional error correction (ECC) and multiple USB 3.1/2.0 interfaces complete the compact and powerful module.

With choices of six and quad-core processor options the board is well positioned to address challenging performance demands. Besides an extensive set of interfaces and features, the MSC C6B-CFLR offers hardware based security compliant to the requirements of TCG (Trusted Computing Group).

The Type 6 pin-out allows direct access to the latest digital display interfaces like DisplayPort 1.4, DisplayPort 1.2, HDMI 1.4 and DVI as well as up to four USB 3.1 interfaces supporting the fastest peripherals currently available.

Highlights

- Intel® Xeon®
- E-2276ME (6C, 2.8/4.5GHz, 45/35W cTDP)
- E-2276ML (6C, 2.0/4.2GHz, 25/35W cTDP)
- E-2254ME (4C, 2.6/3.8GHz, 45/35W cTDP)
- E-2254ML (4C, 1.7/3.5GHz, 25/35W cTDP)
- Intel® Core™ i7
- i7-9850HE (6C, 2.7/4.4GHz, 45/35W cTDP)
- i7-9850HL (6C, 1.9/4.1GHz, 25/35W cTDP)
- Intel® Core™ i3-9100HL (4C, 1.6/2.9GHz, 25W cTDP)
- Intel® Pentium® G5600E (2C, 2.6/3.1GHz, 35W cTDP)
- Intel® Celeron®
- G4930E (2C, 2.4GHz, 35W cTDP)
- G4932E (2C, 1.9GHz, 25W cTDP)
- Intel® UHD Graphics
- Intel® chipsets QM370 or CM246
- Up to 32GB DDR4-2666 SDRAM, dual channel, optional ECC
- Four SATA 6Gb/s mass storage interfaces
- Three DisplayPort/HDMI/DVI interfaces
- Embedded DisplayPort / LVDS interface
- Triple independent display support
- DirectX 12, OpenGL 4.5, OpenCL 2.x
- Resolution up to 4096 x 2304
- Eight PCI Express™ x1 lanes, configurable up to x4, Intel® Rapid Storage Technology support
- PEG configurable as 1x16 or 2x8 or 1x8 + 2x4
- Four USB 3.1/2.0 and four USB 2.0 interfaces
- Trusted Platform Module
- UEFI Firmware

Technical Data - MSC C6B-CFLR

Technology	x86
Formfactor	COM Express Basic
CPU	<p>Intel® Xeon® E-2276ME (six-core, 2.8/4.5GHz, 12MB cache, 45/35W cTDP), Intel® Xeon® E-2276ML (six-core, 2.0/4.2GHz, 12MB cache, 25/35W cTDP), Intel® Xeon® E-2254ME (quad-core, 2.6/3.8GHz, 8MB cache, 45/35W cTDP), Intel® Xeon® E-2254ML (quad-core, 1.7/3.5GHz, 8MB cache, 25/35W cTDP), Intel® Core™ i7-9850HE (six-core, 2.7/4.4GHz, 9MB cache, 45/35W cTDP), Intel® Core™ i7-9850HL (six-core, 1.9/4.1GHz, 9MB cache, 25/35W cTDP), Intel® Core™ i3-9100HL (quad-core, 1.6/2.9GHz, 6MB cache, 25W cTDP), Intel® Pentium® G5600E (dual-core, 2.6/3.1GHz, 4MB cache, 35W cTDP), Intel® Celeron® G4930E (dual-core, 2.4GHz, 2MB cache, 35W cTDP), Intel® Celeron® G4932E (dual-core, 1.9GHz, 2MB cache, 25W cTDP)</p> <p>Intel® Technologies: Intel® vPro, Intel® 64, Intel® Virtualization Technology (VT-x), Intel® Virtualization Technology for Directed I/O (VT-d), Intel® Trusted Execution Technology*, Intel® Adv. Encryption Standard AES-NI, Intel® Turbo Boost Technology 2.0 * not on all models</p>
Chipset	Intel® Platform Controller Hubs (PCH) QM370 or CM246
RAM	<p>2x 260-pin SO-DIMM socket for up to 2x 16GB DDR4 SDRAM (DDR4-2666¹); dual channel operation; ECC option¹² ¹ Depending on SO-DIMM type ² ECC optionally supported on models except Core i7-9850HE/HL</p>
Storage Interfaces	4x SATA channels (up to 6Gb/s)
USB	4x USB 3.1 (Gen 1 & 2)/2.0, 4x USB 2.0
Serial Interfaces	2x high-speed serial ports from PCH
Bus Interfaces	8x PCI Express x1 Gen 3, 1x PCI Express Graphics (PEG) x 16 Gen. 3 LPC bus (Low Pin Count bus; no DMA support)
Display Controller	<p>Integrated Intel UHD graphics Gen. 9 3D Acceleration: DirectX® 11/12, OpenGL 4.3/4.4, OpenGL ES 2.0, OpenCL 2.x; HW accelerated Video Decode: H.264/AVC, VP8, VP9, VP9 10 Bit, H.265/HEVC 8 bit, H.265/HEVC 10 Bit, MPEG2, MJPEG, VC-1 HW accelerated Video Encode: H.264/AVC, VP8, VP9, H.265/HEVC 8 bit, H.265/HEVC 10 Bit, MPEG2, MJPEG.</p> <p>Triple independent display support</p>
Display Interfaces	<p>Display Port and HDMI/DVI: 3x Digital Display Interface, usable as DisplayPort 1.2 (up to 4096 x 2304 @ 60Hz), also usable as HDMI 1.4b or DVI (up to 4096 x 2160 @ 30Hz) 1x Embedded DisplayPort 1.4 (on variants without LVDS only); 4096 x 2304 @ 60Hz</p> <p>LCD: LVDS 24bit, dual-channel (not on all variants); 1920 x 1200 @ 60Hz</p>

Network Interface	10/100/1000Base-TX (integrated in PCH, Intel® i219LM PHY)
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 12V 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>
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	<p>Windows 10 IOT Enterprise BSP for Linux (Yocto) EAPI (HW Programming Interface)</p>
Power Requirement	<p>Voltage: +8.5V to +20V, +5V Stby optional</p> <p>Power Consumption: 35 W to 55 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	125mm x 95mm x 13mm* (*Measured from module PCB bottom side to heat spreader top side. Different heights apply, when using other cooling solutions.)
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Certificates	UL / CE
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Order Reference - MSC C6B-CFLR

Order Number	Description	Reference	Cat
tbd	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel Xeon E-2276ME, six-core, 2.8/4.5GHz, 45W TDP; Chipset:CM246; Graphics: integrated Intel HD Gen 9 (GT2); LVDS (24 Bit, dual channel); 3x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 4x SATA; 4x USB3.1/2, 4x USB2; 8x PCIe x1 Gen 3; PEG x16 Gen3; 2x socket for DDR4 or DDR4ECC SO-DIMM; TPM 2.0;	MSC C6B-CFLR-2276ME-NN1201C PCBFTX	OR
tbd	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel Xeon E-2276ML, six-core, 2.0/4.2GHz, 25W TDP; Chipset:CM246; Graphics: integrated Intel HD Gen 9 (GT2); LVDS (24 Bit, dual channel); 3x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 4x SATA; 4x USB3.1/2, 4x USB2; 8x PCIe x1 Gen 3; PEG x16 Gen3; 2x socket for DDR4 or DDR4ECC SO-DIMM; TPM 2.0;	MSC C6B-CFLR-2276ML-NN1201C PCBFTX	OR
tbd	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel Xeon E-2254ME, four-core, 2.6/3.8GHz, 45W TDP; Chipset:CM246; Graphics: integrated Intel HD Gen 9 (GT2); LVDS (24 Bit, dual channel); 3x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 4x SATA; 4x USB3.1/2, 4x USB2; 8x PCIe x1 Gen 3; PEG x16 Gen3; 2x socket for DDR4 or DDR4ECC SO-DIMM; TPM 2.0;	MSC C6B-CFLR-2254ME-NN1201C PCBFTX	OR
tbd	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel Xeon E-2254ML, four-core, 1.7/3.5GHz, 25W TDP; Chipset:CM246; Graphics: integrated Intel HD Gen 9 (GT2); LVDS (24 Bit, dual channel); 3x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 4x SATA; 4x USB3.1/2, 4x USB2; 8x PCIe x1 Gen 3; PEG x16 Gen3; 2x socket for DDR4 or DDR4ECC SO-DIMM; TPM 2.0;	MSC C6B-CFLR-2254ML-NN1201C PCBFTX	OR
tbd	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel Core i7-9850HE, six-core, 2.7/4.4GHz, 45W TDP; Chipset:QM370; Graphics: integrated Intel HD Gen 9 (GT2); LVDS (24 Bit, dual channel); 3x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 4x SATA; 4x USB3.1/2, 4x USB2; 8x PCIe x1 Gen 3; PEG x16 Gen3; 2x socket for DDR4 SO-DIMM; TPM 2.0;	MSC C6B-CFLR-9850HE-NN0201C PCBFTX	OR

Order Reference - MSC C6B-CFLR

Order Number	Description	Reference	Cat
tbd	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel Core i7-9850HL, six-core, 1.9/4.1GHz, 25W TDP; Chipset:QM370; Graphics: integrated Intel HD Gen 9 (GT2); LVDS (24 Bit, dual channel); 3x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 4x SATA; 4x USB3.1/2, 4x USB2; 8x PCIe x1 Gen 3; PEG x16 Gen3; 2x socket for DDR4 SO-DIMM; TPM 2.0;	MSC C6B-CFLR-9850HL-NN0201C PCBFTX	OR
tbd	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel Core i3-9100HL, four-core, 1.6/2.9GHz, 25W TDP; Chipset:QM370; Graphics: integrated Intel HD Gen 9 (GT2); Embedded DisplayPort (eDP); 3x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 4x SATA; 4x USB3.1/2, 4x USB2; 8x PCIe x1 Gen 3; PEG x16 Gen3; 2x socket for DDR4 SO-DIMM; TPM 2.0;	MSC C6B-CFLR-9100HL-NN0101C PCBFTX	OR
tbd	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel Pentium G5600E, two-core, 2.6/3.1GHz, 35W TDP; Chipset:QM370; Graphics: integrated Intel HD Gen 9 (GT2); Embedded DisplayPort (eDP); 3x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 4x SATA; 4x USB3.1/2, 4x USB2; 8x PCIe x1 Gen 3; PEG x16 Gen3; 2x socket for DDR4 SO-DIMM; TPM 2.0;	MSC C6B-CFLR-G5600E-NN0101C PCBFTX	OR
tbd	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel Celeron G4930E, two-core, 2.4GHz, 35W TDP; Chipset:QM370; Graphics: integrated Intel HD Gen 9 (GT2); Embedded DisplayPort (eDP); 3x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 4x SATA; 4x USB3.1/2, 4x USB2; 8x PCIe x1 Gen 3; PEG x16 Gen3; 2x socket for DDR4 SO-DIMM; TPM 2.0;	MSC C6B-CFLR-G4930E-NN0101C PCBFTX	OR
tbd	COM Express Type 6 Basic module (125mm x 95mm); CPU: Intel Celeron G4932E, two-core, 1.9GHz, 25W TDP; Chipset:QM370; Graphics: integrated Intel HD Gen 9 (GT2); Embedded DisplayPort (eDP); 3x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 4x SATA; 4x USB3.1/2, 4x USB2; 8x PCIe x1 Gen 3; PEG x16 Gen3; 2x socket for DDR4 SO-DIMM; TPM 2.0;	MSC C6B-CFLR-G4932E-NN0101C PCBFTX	OR

Avnet Integrated
MSC Technologies GmbH
Industriestr. 16
76297 Stutensee

integrated@avnet.eu
[avnet.com/integrated](https://www.avnet.com/integrated)

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