

## MSC C6C-KLU

Intel® Core™ 7th Generation



95 x 95



17 / 19W



0 +60



IoT Solutions  
Alliance

COM  Express

## Description

The MSC C6C-KLU module is based on Intel's 7th generation Core processor family. The Intel multi-chip-package in 14 nm technology includes processor, graphics and chipset on one carrier and allows extreme compact high-performance designs.

The new MSC C6C-KLU brings triple independent display support with up to 4k x 2k resolution, highest level graphics acceleration and hardware based video en-/decoding. Fast DDR4 memory and multiple USB 3.0/2.0 interfaces complete the compact and power saving module.

Different dual-core processors are supported by this design. Besides an extensive set of interfaces and features, the MSC C6C-KLU optionally 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, HDMI 1.4b and DVI as well as up to four USB 3.0 interfaces supporting the fastest peripherals currently available.

## Highlights

- Intel Core i7-7600U dual-core 2.8/3.9GHz, 4MB L2, 15W TDP
- Intel Core i5-7300U dual-core 2.6/3.5GHz, 3MB L2, 15W TDP
- Intel Core i3-7100U dual-core 2.4GHz, 3MB L2, 15W TDP
- Intel Celeron 3965U dual-core 2.2GHz, 2MB L2, 15W TDP
- Integrated Intel® HD Graphics 610, 620
- Up to 32 GB DDR4-2133 SDRAM, dual-channel
- Three SATA 6Gb/s mass storage interfaces
- MicroSD card socket
- Two DisplayPort/HDMI/DVI interfaces
- Embedded DisplayPort / LVDS (24 Bit, dual channel) interface
- Three independent displays supported
- DirectX 12, OpenGL 4.4, OpenCL 2.x
- Resolution up to 4096 x 2304
- Four USB 3.0/2.0 and four USB 2.0 interfaces
- Eight PCI Express™ x1 lanes
- Trusted Platform Module
- UEFI Firmware

## Technical Data - MSC C6C-KLU

<b>Technology</b>	x86
<b>Formfactor</b>	COM Express Compact
<b>CPU</b>	Intel Core i7-7600U dual-core 2.8/3.9GHz, 4MB L2, 15W TDP Intel Core i5-7300U dual-core 2.6/3.5GHz, 3MB L2, 15W TDP Intel Core i3-7100U dual-core 2.4GHz, 3MB L2, 15W TDP Intel Celeron 3965U dual-core 2.2GHz, 2MB L2, 15W TDP
<b>Chipset</b>	Integrated in Multi-Chip-Package
<b>RAM</b>	2x 260-pin SO-DIMM socket for up to 2x 16 GB DDR4 SDRAM (DDR4-2133); dual channel operation
<b>Flash</b>	MicroSD card socket
<b>Storage Interfaces</b>	Up to 3x SATA 6Gb/s
<b>USB</b>	4x USB 3.0/2.0 4x USB 2.0
<b>Serial Interfaces</b>	2x high-speed serial ports from PCH
<b>Bus Interfaces</b>	8x PCI Express x1 Gen 3 LPC bus (Low Pin Count bus; no DMA support)
<b>Display Controller</b>	Integrated Intel HD graphics Gen. 9 3D Acceleration: DirectX® 11/12, OpenGL 4.3/4.4, OpenGL ES 2.0, OpenCL 2.x; Video Decode: H.264 @ Level 5.2, H.265/HEVC 10-bit, MPEG2, VC1/WMV, JPEG, VP8, VP9 10-bit; Video Encode: H.263, H.264, VP8, AVC JPEG, VP9 GPU-accelerated.  Triple independent display support
<b>Display Interfaces</b>	Display Port and HDMI/DVI: 2x Digital Display Interface, usable as DisplayPort 1.2 (up to 4096 x 2304 @ 60Hz), also usable as HDMI 1.4 or DVI (up to 4096 x 2160 @ 30Hz) 1x Embedded DisplayPort 1.4 (on variants without LVDS only); 4096 x 2304 @ 60Hz  LCD: LVDS 24bit, dual-channel (not on all variants); 1920 x 1200 @ 60Hz
<b>Network Interface</b>	10/100/1000Base-TX (Intel i219)
<b>Audio Interface</b>	High Definition Audio
<b>Security Device</b>	TPM 1.2

<b>Miscellaneous</b>	<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>
<b>Feature Highlights</b>	Type 6 pin-out
<b>Firmware</b>	<p>UEFI Firmware: AMI Aptio® V</p> <p>Security: TPM 1.2 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>
<b>OS Support</b>	Windows 10 (embedded) BSP for Linux (Yocto) EAPI (HW Programming Interface)
<b>Power Requirement</b>	12V +-5%, 5V Stby optional, 17 W to 19 W (typ.)
<b>Environment</b>	<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>
<b>Dimensions</b>	95mm x 95mm
<b>Certificates</b>	UL / CE

## Order Reference - MSC C6C-KLU

Order Number	Description	Reference	Cat
70278	COM Express Type 6 Compact module (95mm x 95mm); CPU: Intel Celeron 3965U, dual-core, 2.2GHz, 15W TDP; Graphics: integrated Intel HD Gen 9 (GT1); LVDS; 2x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 3x SATA, 4x USB3, 4x USB2, 8x PCIe x1 Gen 3; 2x socket for DDR4 SO-DIMM.	MSC C6C-KLU-3965U-NN201C PCBFTX	OR
82915	COM Express Type 6 Compact module (95mm x 95mm); CPU: Intel Celeron 3965U, dual-core, 2.2GHz, 15W TDP; Graphics: integrated Intel HD Gen 9 (GT1); LVDS; 2x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 2x SATA, 4x USB3, 4x USB2, 2x PCIe Gen 3 x4; 2x socket for DDR4 SO-DIMM.	MSC C6C-KLU-3965U-NN211C PCBFTX	OR
70268	COM Express Type 6 Compact module (95mm x 95mm); CPU: Intel i3-7100U, dual-core, 2.4GHz, 15W TDP; Graphics: integrated Intel HD Gen 9 (GT2); LVDS; 2x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 3x SATA, 4x USB3, 4x USB2, 8x PCIe x1 Gen 3; 2x socket for DDR4 SO-DIMM.	MSC C6C-KLU-7100U-NN201C PCBFTX	OR
70276	COM Express Type 6 Compact module (95mm x 95mm); CPU: Intel i5-7300U, dual-core, 2.6/3.5GHz, 15W TDP; Graphics: integrated Intel HD Gen 9 (GT2); LVDS; 2x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 3x SATA, 4x USB3, 4x USB2, 8x PCIe x1 Gen 3; 2x socket for DDR4 SO-DIMM.	MSC C6C-KLU-7300U- NN201C PCBFTX	OR
70270	COM Express Type 6 Compact module (95mm x 95mm); CPU: Intel i7-7600U, dual-core, 2.8/3.9GHz, 15W TDP; Graphics: integrated Intel HD Gen 9 (GT2); LVDS; 2x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 3x SATA, 4x USB3, 4x USB2, 8x PCIe x1 Gen 3; 2x socket for DDR4 SO-DIMM.	MSC C6C-KLU-7600U- NN201C PCBFTX	OR
70274	COM Express Type 6 Compact module (95mm x 95mm); CPU: Intel Celeron 3965U, dual-core, 2.2GHz, 15W TDP; Graphics: integrated Intel HD Gen 9 (GT1); eDP; 2x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 3x SATA, 4x USB3, 4x USB2, 8x PCIe x1 Gen 3; 2x socket for DDR4 SO-DIMM.	MSC C6C-KLU-3965U-NN101C PCBFTX	OR
70280	COM Express Type 6 Compact module (95mm x 95mm); CPU: Intel i3-7100U, dual-core, 2.4GHz, 15W TDP; Graphics: integrated Intel HD Gen 9 (GT2); eDP; 2x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 3x SATA, 4x USB3, 4x USB2, 8x PCIe x1 Gen 3; 2x socket for DDR4 SO-DIMM.	MSC C6C-KLU-7100U-NN101C PCBFTX	OR

## Order Reference - MSC C6C-KLU

Order Number	Description	Reference	Cat
70266	COM Express Type 6 Compact module (95mm x 95mm); CPU: Intel i5-7300U, dual-core, 2.6/3.5GHz, 15W TDP; Graphics: integrated Intel HD Gen 9 (GT2); eDP; 2x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 3x SATA, 4x USB3, 4x USB2, 8x PCIe x1 Gen 3; 2x socket for DDR4 SO-DIMM.	MSC C6C-KLU-7300U-NN101C PCBFTX	OR
70272	COM Express Type 6 Compact module (95mm x 95mm); CPU: Intel i7-7600U, dual-core, 2.8/3.9GHz, 15W TDP; Graphics: integrated Intel HD Gen 9 (GT2); eDP; 2x DP/HDMI/DVI; Ethernet: Intel i219 Gbit; HD audio; 3x SATA, 4x USB3, 4x USB2, 8x PCIe x1 Gen 3; 2x socket for DDR4 SO-DIMM.	MSC C6C-KLU-7600U-NN101C PCBFTX	OR

## Accessories

Order Number	Description	Reference
<b>Carrier Options</b>		
67295	COM Express Type 6 Evaluation Carrier Board with PCI Express x4/x16 slot, USB 3.0/2.0, GbE, SATA, DisplayPort, eDP/LVDS, VGA and HD audio interfaces; Mini PCI Express socket, SD card slot, ATX power connector and single 12V power jack. Dimensions: 170mm x 170mm (Mini-ITX form factor)	MSC C6-MB-EV-001 PCBFTX
41857	COM Express Type 6 Evaluation Carrier Board with various PCI Express x1, x4 and x16 slots, USB 3.0/2.0, GbE, SATA, DisplayPort, HDMI, LVDS, eDP, VGA, HD audio interfaces; mSATA and Mini PCI Express sockets, POST code display, ATX power connector. Dimensions: 305 x 244 mm (ATX form factor)	MSC C6-MB-EVA PCBFTX
<b>Cooling Options</b>		
1129634	Active Heatsink for C6C-SLU and C6C-KLU, consisting of a single-piece aluminum profile with fins, milled standoffs without thread (2.7mm inner diameter), screws and thermopads for the thermal contact to SOC. PWM fan 80x80x15mm.	MSC C6C-SLU-01 HSF-001
1129633	Passive Heatsink for C6C-SLU and C6C-KLU, consisting of a single-piece aluminum profile with fins, milled standoffs without thread (2.7mm inner diameter), screws and thermopad for the thermal contact to SOC.	MSC C6C-SLU-01 HSI-001
1129631	Heatspreader for C6C-SLU and C6C-KLU. Single-piece aluminum profile, milled standoffs without thread (2.7mm inner diameter), screws and thermopad for the thermal contact to SOC.	MSC C6C-SLU-01 HSP-001
1129632	Heatspreader for C6C-SLU and C6C-KLU. Single-piece aluminum profile with milled standoffs with M2.5 thread, screws and thermopad for the thermal contact to SOC.	MSC C6C-SLU-02 HSP-001
<b>Memory Options</b>		
83002	4GB DDR4-2400 SoDimm, 1.2V	M4SI-4GSSNCSJ-F
81883	8GB DDR4-2400 SoDimm, 1.2V	M4SI-8GSSOCSJ-F
<b>Starter Kits</b>		
68454	Starterkit for COM Express Type 6 modules MSC C6C-SLU/KLU with Intel 6th/7th generation Core processors (Skylake U, Kaby Lake U). Consists of the MSC C6-MB-EV Mini-ITX platform board, suitable Heatsink with fan, two memory modules and a suitable power supply with cable kit. Please order separately the COM Express C6C-SLU/KLU module of your choice.	MSC C6-SK-SLU-EV-KIT001 BRDFTX

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