MSC C10M-BT
Intel® Atom™ / Celeron® SOC
Type 10 Pin-out

Description
The MSC C10M-BT module is based on Intel’s multi-core system-on-chip (SOC) Atom generation that integrates processor core, graphics, memory, and I/O interfaces into one solution. Based on 22nm processor technology it provides outstanding computing and graphics power and highest power efficiency.

The new MSC C10M-BT brings dual independent display support, DirectX 11.1 and fast DDR3L memory on a very compact, power saving and cost-efficient COM Express Mini module.

Different SOCs with single-, dual- and quad-core processors are supported by this design. Besides an extensive set of interfaces and features, the MSC C10M-BT optionally offers hardware based security compliant to the requirements of TCG (Trusted Computing Group).

Type 10 pin-out offers USB 3.0 support and digital display interfaces like DisplayPort, HDMI 1.4a and DVI.

The rugged design with soldered memory, optional ECC support and extended temperature range opens new application areas.

55x84 / 8 / 14 W
+85°C
-40°C

Specifications
- Intel Atom E3845 quad-core 1.91GHz, 10W TDP
- Intel Atom E3827 dual-core 1.75GHz, 8W TDP
- Intel Atom E3826 dual -core 1.46GHz, 7W TDP
- Intel Atom E3825 dual -core 1.33GHz, 6W TDP
- Intel Atom E3815 single-core 1.46GHz, 5W TDP
- Intel Celeron N2930 quad-core 1.83/2.16GHz, 7.5W TDP
- Intel Celeron J1900 quad-core 2.00/2.42GHz, 10W TDP
- Integrated Intel Gen. 7 HD graphics
- Up to 4GB DDR3L SDRAM
- Two SATA 3Gb/s mass storage interfaces
- eMMC SSD (optional)
- DisplayPort/HDMI/DVI interface
- LVDS/Embedded DisplayPort interface
- Two independent displays supported
- DirectX 11.1, OpenGL 3.2, OpenCL 1.1
- One USB 3.0 and up to seven USB 2.0 interfaces
- Trusted Platform Module (option)
- Extended temperature variants

Highlights
Technical Data – MSC C10M-BT

Module Standard
PICMG COM Express™ Standard COM.0
Type 10 compliant interface, “mini” form factor

Core Logic, Memory
CPU
- Intel Atom E3845 quad-core 1.91GHz, 2MB L2, 10W TDP
- Intel Atom E3827 dual-core 1.75GHz, 1MB L2, 8W TDP
- Intel Atom E3826 dual -core 1.64GHz, 1MB L2, 7W TDP
- Intel Atom E3825 dual -core 1.33GHz, 1MB L2, 6W TDP
- Intel Atom E3815 single-core 1.44GHz, 512kB L2, 5W TDP
- Intel Celeron N2930 quad-core 1.83/2.16GHz, 2MB L2, 7.5W TDP
- Intel Celeron J1900 quad-core 2.00/2.42GHz, 2MB L2, 10W TDP

Intel® Technologies: Intel® 64, Intel® Virtualization Technology, AES-NI

Chipset
Integrated in SOC

Memory
Up to 4GB DDR3L@1.35V SDRAM (DDR1333) soldered on board, ECC optional

Storage Interfaces
SATA
2x SATA channels (up to 3 Gb/s)

SSD
eMMC SD (optional)

SD Card Interface
SC Card on carrier board supported

Bus Interfaces
USB
- 1 x USB 3.0
- 4 x USB 2.0
- 3 x USB 2.0 (optional hub)

PCI Express™
Three x1 channels PCI Express Gen 2
Fourth channel available if no GbE is used

LPC
Low Pin Count bus for legacy interfaces

Display Interfaces
Graphics Controller
Integrated Intel HD graphics Gen. 7

3D Acceleration (DirectX® 11, OpenGL 3.2, OpenCL 1.1)
Video decoded hardware acceleration including support for H.264, MPEG-2, MVC, VC-1, WMV9 and VP8 formats.

Dual independent display support

Video Memory
UMA

LCI Interface
LVDS 24bit, single-channel, 1366 x 768 @ 60Hz (shared with Embedded DisplayPort)

Display Port and HDMI Interfaces
1x Digital Display Interface (DP 1.1a [2560 x 1600], DVI/HDMI 1.4a [1920 x 1080])
1x Embedded DisplayPort 1.3 (shared with LVDS)
2560 x 1600 @ 60Hz

Miscellaneous
Watchdog Timer
Initiates system reset, programmable

Real-Time Clock
Integrated in SOC, battery external

System Clocking
Voltage, temperature, CPU fan, system fan

Network Interface
Ethernet
10/100/1000Base-TX (Intel® i210)

Audio Interface
HD audio

Security Interface
Infineon Trusted Platform Module (option)

Firmware, Software
UEFI Firmware
AMI Aptio®

Security
TPM 1.2 support, TCG compliant (on request)

Power Management
ACPI
Active fan control

USB
USB legacy support [keyboard, mouse, storage]

Video
Intel Video BIOS

HW Programming I/F
EAPI

Board Support Package (BSP)
Microsoft Windows® Embedded Standard 7, Linux (on request)

Power Supply

Power Supply Voltage
Wide range input +5 ... +20V, 5V Stby optional

Power Consumption
8W (typ.) up to 14W (typ.)

Environment
Ambient Temperature
0° ... 60° C (operating, commercial)
-40° ... 85° C (operating, industrial)
-40° ... 85° C (storage)

Humidity
5 ... 95% (operating, non-condensing)
5 ... 95% (storage, non-condensing)

Mechanical
Dimensions
84mm x 55mm
## Order Reference – MSC C10M-BT

<table>
<thead>
<tr>
<th>Order Number</th>
<th>Description</th>
<th>Reference</th>
<th>Cat.</th>
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</thead>
<tbody>
<tr>
<td>49217</td>
<td>Intel Celeron J1900 quad-core 2.00/2.420Hz, 2MB L2, 10W TDP, 4GB DDR3 SDRAM, 16GB eMMC, 10/100/1000Base-TX, Type 10</td>
<td>MSC C10M-BT-20E7</td>
<td>tbd</td>
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<tr>
<td>49215</td>
<td>Intel Atom E3845 quad-core 1.91GHz, 2MB L2, 10W TDP, 4GB DDR3 ECC SDRAM, 16GB eMMC, TPM, 10/100/1000Base-TX, Type 10, -40 ... +85° C</td>
<td>MSC C10M-BT-33E5</td>
<td>tbd</td>
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<tr>
<td>49219</td>
<td>Intel Atom E3827 dual-core 1.75GHz, 1MB L2, 8W TDP, 4GB DDR3 SDRAM, 10/100/1000Base-TX, Type 10, -40 ... +85° C</td>
<td>MSC C10M-BT-31E4</td>
<td>tbd</td>
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<tr>
<td>49223</td>
<td>Intel Atom E3825 dual-core 1.33GHz, 1MB L2, 6W TDP, 4GB DDR3 SDRAM, 10/100/1000Base-TX, Type 10</td>
<td>MSC C10M-BT-2022</td>
<td>tbd</td>
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<tr>
<td>49221</td>
<td>Intel Atom E3815 single-core 1.44GHz, 512kB L2, 5W TDP, 2GB DDR3 SDRAM, 10/100/1000Base-TX, Type 10, -40 ... +85° C</td>
<td>MSC C10M-BT-2111</td>
<td>tbd</td>
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1) PV = Preferred variant; OR = on Request (in OEM quantities only)

## Accessories

<table>
<thead>
<tr>
<th>Order Number</th>
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<tbody>
<tr>
<td></td>
<td><strong>Starter Kits</strong></td>
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<tr>
<td>tbd</td>
<td>COM Express Type 10 starter kit consisting of a Type 10 baseboard and an active heatsink with fan for the COM-Express Type 10 module. Please order separately the COM-Express C10M-BT module of your choice.</td>
<td>tbd</td>
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<tr>
<td></td>
<td><strong>Carrier Boards</strong></td>
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<tr>
<td>tbd</td>
<td>COM Express Type 10 Test and Evaluation Board</td>
<td>tbd</td>
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<tr>
<td>tbd</td>
<td>Passive Heatsink for C10M-BT</td>
<td>tbd</td>
</tr>
<tr>
<td>1124457</td>
<td>Heatspreader for C10M-BT. Single-piece aluminum profile, standoffs without thread (2.8mm inner diameter) and thermopad for the thermal contact to SOC</td>
<td>MSC C10M-BT-01 HSP-001</td>
</tr>
<tr>
<td>1124458</td>
<td>Heatspreader for C10M-BT. Single-piece aluminum profile, standoffs with M2.5 thread and thermopad for the thermal contact to SOC</td>
<td>MSC C10M-BT-02 HSP-001</td>
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