**COM Express™**

**MSC C6C-BT**

Intel® Atom™ / Celeron® SOC

**Type 6 Pin-out**

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**Description**

The MSC C6C-BT module is based on Intel’s multi-core system-on-chip (SOC) Atom generation that integrates next generation Intel processor core, graphics, memory, and I/O interfaces into one solution. Based on 22nm processor technology this multi-core Atom processor provides outstanding computing and graphics power and is more power efficient compared to its predecessors.

The new MSC C6C-BT brings dual independent display support, DirectX 11.1, fast DDR3L memory and USB 3.0 on a compact, power saving and cost-efficient 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 C6C-BT optionally offers hardware based security compliant to the requirements of TCG [Trusted Computing Group].

The new Type 6 pin-out allows direct access to the latest digital display interfaces like DisplayPort, HDMI 1.4a and DVI. USB 3.0 interfaces support the fastest peripheral devices currently available.

<table>
<thead>
<tr>
<th>95x95</th>
<th>8 / 14 W</th>
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</thead>
<tbody>
<tr>
<td>Medium</td>
<td></td>
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</tbody>
</table>

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**Highlights**

- 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 8GB DDR3L SDRAM, dual-channel
- Two SATA 3Gb/s mass storage interfaces
- MicroSD card socket
- DisplayPort/HDMI/DVI interface
- LVDS/Embedded DisplayPort interface
- VGA interface
- Two independent displays supported
- DirectX 11.1, OpenGL 3.2, OpenCL 1.1
- One USB 3.0/2.0 and up to seven USB 2.0 interfaces
- Up to five PCI Express™ x1 lanes
- Trusted Platform Module (option)
- Extended temperature variants

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## Technical Data – MSC C6C-BT

### Module Standard

**PICMG COM Express™ Standard COM.0**
Type 6 compliant interface, "compact" 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, 6W TDP
- Intel Atom E3826 dual-core 1.46GHz, 1MB L2, 7W TDP
- Intel Atom E3825 dual-core 1.33GHz, 1MB L2, 6W 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**
- 2x 204-pin SO-DIMM socket for up to 80B DDR3L01.35V SDRAM (DDR1333)

### Storage Interfaces

**SATA**
- 2x SATA channels (up to 3 Gb/s)

**SSD**
- MicroSD card socket, bootable

### Bus Interfaces

**USB**
- 1 x USB 3.0/2.0
- 7 x USB 2.0

**PCI Express™**
- Five x1 channels PCI Express Gen 2

**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, MPEG2, MVC, VC-1, WMV9 and VP8 formats.

**Dual independent display support**

**Video Memory**
- UMA

**LCD Interface**
- LVDS 24bit, dual-channel (shared with EmbeddedDisplayPort)
  - 1920 x 1200 @ 60Hz

**VGA Interface**
- Resolution up to 2560 x 1600 @ 60Hz

**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

**Fan Supply**
- 4-pin header for CPU fan, PWM speed controlled
- PWM speed control for system fan supported via carrier board

**Real-Time Clock**
- Integrated in SOC, battery external

**System Monitoring**
- Voltage, temperature, CPU fan, system fan

### Network Interface

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

**Audio Interface**
- HD audio

**Security Device**
- Infineon Trusted Platform Module (Option)

**Firmware, Software**
- UEFI Firmware
- AMI Aiptio®

**Security**
- TPM 1.2 support, TCG compliant (on request)

**Power Management**
- ACPI
- Active fan control

**USB**
- USB legacy support (keyboard, mouse, storagel)

**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 ... +17V, 5VStby optional

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

### Environment

**Ambient Temperature**
- 0° ... 60° C (operating, C-Temp),
- -40° ... +85° C (operating, l-Temp),
- -25° ... 85° C (storage)

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

### Mechanical

**Dimensions**
- 95mm x 95mm x 13mm

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## Order Reference – MSC C6C-BT

<table>
<thead>
<tr>
<th>Order Number</th>
<th>Description</th>
<th>Reference</th>
<th>Cat. 1)</th>
<th></th>
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<tbody>
<tr>
<td>46763</td>
<td>Intel Atom E3845 quad-core 1.91GHz, 2MB L2, 10W TDP, 10/100/1000Base-TX, MicroSD slot, 2x SODIMM socket, Type 6</td>
<td>MSC C6C-BT-005</td>
<td>PV</td>
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<td>46761</td>
<td>Intel Atom E3827 dual-core 1.75GHz, 1MB L2, 8W TDP, 10/100/1000Base-TX, MicroSD slot, 2x SODIMM socket, Type 6</td>
<td>MSC C6C-BT-004</td>
<td>PV</td>
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<td>46759</td>
<td>Intel Atom E3826 dual-core 1.46GHz, 1MB L2, 7W TDP, 10/100/1000Base-TX, MicroSD slot, 2x SODIMM socket, Type 6</td>
<td>MSC C6C-BT-003</td>
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<td>46757</td>
<td>Intel Atom E3825 dual-core 1.33GHz, 1MB L2, 6W TDP, 10/100/1000Base-TX, MicroSD slot, 1x SODIMM socket, Type 6</td>
<td>MSC C6C-BT-002</td>
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<td>46755</td>
<td>Intel Atom E3815 single-core 1.46GHz, 512kB L2, 5W TDP, 10/100/1000Base-TX, MicroSD slot, 1x SODIMM socket, Type 6</td>
<td>MSC C6C-BT-001</td>
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<td>46765</td>
<td>Intel Celeron N2930 quad-core 1.83/2.16GHz, 2MB L2, 7.5W TDP, 10/100/1000Base-TX, 2x SODIMM socket, Type 6</td>
<td>MSC C6C-BT-006</td>
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<td>46767</td>
<td>Intel Celeron J1900 quad-core 2.00/2.42GHz, 2MB L2, 10W TDP, 10/100/1000Base-TX, 2x SODIMM socket, Type 6</td>
<td>MSC C6C-BT-007</td>
<td>PV</td>
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<td>65889</td>
<td>Intel Atom E3845 quad-core 1.91GHz, 2MB L2, 10W TDP, 10/100/1000Base-TX, MicroSD slot, 2x SODIMM socket, Type 6, -40° ... +85° C (I-Temp)</td>
<td>MSC C6C-BT-105</td>
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<td>65887</td>
<td>Intel Atom E3827 dual-core 1.75GHz, 1MB L2, 8W TDP, 10/100/1000Base-TX, MicroSD slot, 2x SODIMM socket, Type 6, -40° ... +85° C (I-Temp)</td>
<td>MSC C6C-BT-104</td>
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<td>65885</td>
<td>Intel Atom E3826 dual-core 1.46GHz, 1MB L2, 7W TDP, 10/100/1000Base-TX, MicroSD slot, 2x SODIMM socket, Type 6, -40° ... +85° C (I-Temp)</td>
<td>MSC C6C-BT-103</td>
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<td>65883</td>
<td>Intel Atom E3825 dual-core 1.33GHz, 1MB L2, 6W TDP, 10/100/1000Base-TX, MicroSD slot, 1x SODIMM socket, Type 6, -40° ... +85° C (I-Temp)</td>
<td>MSC C6C-BT-102</td>
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<td>65881</td>
<td>Intel Atom E3815 single-core 1.46GHz, 512kB L2, 5W TDP, 10/100/1000Base-TX, MicroSD slot, 1x SODIMM socket, Type 6, -40° ... +85° C (I-Temp)</td>
<td>MSC C6C-BT-101</td>
<td>OR</td>
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1) PV = Preferred variant; OR = on Request (in OEM quantities only)
### Accessories

<table>
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<tr>
<th>Order Number</th>
<th>Description</th>
<th>Reference</th>
</tr>
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<tbody>
<tr>
<td>tbd</td>
<td>COM Express Type 6 starter kit consisting of a Type 6 baseboard, the active heatsink with fan for the COM-Express Type 6 module, and two DDR3 SO-DIMM memory modules. Please order separately the COM-Express C6C-BT module of your choice.</td>
<td>MSC C6-SK-BT-T6T2-KIT001</td>
</tr>
<tr>
<td>41886</td>
<td>COM Express Type 6 Small Test and Evaluation Board with one PCI Express socket, USB 3.0, GbE, SATA, DisplayPort, HDMI, VGA and HD audio interfaces; ATX power connector. Also usable as Type 6 to Type 2 converter on MSC CX-MB-EVA2. Dimensions: 140 x 184 mm</td>
<td>MSC C6-AD-T6T2</td>
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<tr>
<td>41857</td>
<td>COM Express Type 6 Evaluation board with various PCI Express interfaces, SATA and mSATA, USB 2.0/3.0, Display Port and eDP, HDMI/DVI, HD-Audio, POST code display. ATX form factor</td>
<td>MSC C6-MB-EVA</td>
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<tr>
<td>1119053</td>
<td>Passive Heatsink for C6C-BT and CXC-BT, consisting of a single-piece aluminum profile with fins, pressed in standoffs without thread [2.7mm inner diameter], screws and thermopad for the thermal contact to SOC.</td>
<td>MSC C6C-BT-01 HSI-001</td>
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<tr>
<td>1120173</td>
<td>Active Heatsink for C6C-BT and CXC-BT, consisting of a single-piece aluminum profile with fins, pressed in standoffs without thread [2.7mm inner diameter], screws and thermopad for the thermal contact to SOC.</td>
<td>MSC C6C-BT-01 HSF-001</td>
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<tr>
<td>1122653</td>
<td>Heatspreader for C6C-BT and CXC-BT. Single-piece aluminum profile, pressed in threaded standoffs (M2.5), screws and thermopad for the thermal contact to SOC.</td>
<td>MSC C6C-BT-02 HSP-001</td>
</tr>
<tr>
<td>1122654</td>
<td>Heatspreader for C6C-BT and CXC-BT. Single-piece aluminum profile, pressed in standoffs without thread [2.7mm inner diameter], screws and thermopad for the thermal contact to SOC.</td>
<td>MSC C6C-BT-01 HSP-001</td>
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<tr>
<td>1110591</td>
<td>DDR3 SODIMM, 2GB/1600, 256Mx64, CL9, 256Mx8 based, 1rank, 1.35V</td>
<td>HMT32S56EF8A-PBN0</td>
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<tr>
<td>1102661</td>
<td>DDR3 SODIMM 4GB PC1600, 512Mx64, based on 512Mx8, single rank, 1.35V</td>
<td>HMT45S56AF8A-PBN0</td>
</tr>
</tbody>
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2) Pre-qualified memory modules for the CPU product above

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