MSC CXC-BT
Intel® Atom™ / Celeron® SOC
Type 2 Pin-out

Description
The MSC CXC-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 CXC-BT brings dual independent display support, DirectX 11.1 and fast DDR3L memory 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 CXC-BT optionally offers hardware based security compliant to the requirements of TCG (Trusted Computing Group).

The Type 2 pin-out ensures compatibility to existing system and carrier board designs.

| Highlights |
|-------------------|-------------------|
| Intel Atom E3845 quad-core 1.91GHz, 10W TDP | One [two] SATA 3Gb/s mass storage interface |
| Intel Atom E3827 dual-core 1.75GHz, 8W TDP | One [zero] PATA/IDE mass storage interface |
| Intel Atom E3826 dual -core 1.46GHz, 7W TDP | MicroSD card socket |
| Intel Atom E3825 dual -core 1.33GHz, 6W TDP | LVDS 24bit, dual-channel |
| Intel Atom E3815 single-core 1.46GHz, 5W TDP | VGA interface |
| Intel Celeron N2930 quad-core 1.83/2.16GHz, 7.5W TDP | Two independent displays supported |
| Intel Celeron J1900 quad-core 2.00/2.42GHz, 10W TDP | DirectX 11.1, OpenGL 3.2, OpenCL 1.1 |
| Integrated Intel Gen. 7 HD graphics | Eight USB 2.0 interfaces |
| Up to 8GB DDR3L SDRAM, dual-channel | Trusted Platform Module (option) |
| | Extended temperature variants [on request] |
# Technical Data – MSC CXC-BT

## Module Standard
**PICMG COM Express™ Standard COM 0**
Type 2 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 Atom E3815 single-core 1.44GHz, S12B 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**
- 2x 204-pin SO-DIMM socket for up to 8GB DDR3L@1.35V SDRAM [DDR1333]

## Storage Interfaces

**SATA**
- 2x SATA channels (up to 3 Gb/s); 1x if PATA is used

**PATA**
- 1x PATA interface (using one of the SATA channels)

**SSD**
- MicroSD card socket, bootable

## Bus Interfaces

**USB**
- 4 x USB 2.0
- 4 x USB 2.0 (optional hub)

**PCI Express™**
- Two x1 channels PCI Express Gen 2;
- Two additional x1 channels PCI Express Gen 2 (option);

**PCI Bus**
- 32 Bit, 33MHz standard interface [PCI 2.3]

**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; 1920 x 1200 @ 60Hz

**VGA Interface**
- Resolution up to 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 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 ... +17V, 5VSt by optional

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

## Environment

**Ambient Temperature**
- 0° ... 60° C (operating, C-Temp),
- -40° ... +85° C (operating, I-Temp),
- -25° ... +85° C (storage)
Extended temperature variants possible on request

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

## Mechanical

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

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www.msc-technologies.eu · info@msc-technologies.eu
# Order Reference – MSC CXC-BT

<table>
<thead>
<tr>
<th>Order Number</th>
<th>Description</th>
<th>Reference</th>
<th>Cat. 1)</th>
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<tbody>
<tr>
<td>46823</td>
<td>Intel Atom E3845 quad-core 1.91GHz, 2MB L2, 10W TDP, 6GbE, 8x USB2, 2x PCIe x1, MicroSD slot, 2x SODIMM socket, Type 2</td>
<td>MSC CXC-BT-005</td>
<td>PV</td>
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<td>46821</td>
<td>Intel Atom E3827 dual-core 1.75GHz, 1MB L2, 8W TDP, 6GbE, 8x USB2, 2x PCIe x1, MicroSD slot, 2x SODIMM socket, Type 2</td>
<td>MSC CXC-BT-004</td>
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<td>46819</td>
<td>Intel Atom E3826 dual-core 1.46GHz, 1MB L2, 7W TDP, 6GbE, 8x USB2, 2x PCIe x1, MicroSD slot, 2x SODIMM socket, Type 2</td>
<td>MSC CXC-BT-003</td>
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<td>MSC CXC-BT-002</td>
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<td>MSC CXC-BT-006</td>
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<td>Intel Celeron J1900 quad-core 2.00/2.40GHz, 2MB L2, 10W TDP, 6GbE, 8x USB2, 2x PCIe x1, 2x SODIMM socket, Type 2</td>
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<td>MSC CXC-BT-105</td>
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<td>MSC CXC-BT-104</td>
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<td>MSC CXC-BT-101</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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| 32367        | Carrier Boards  
COM Express Type 2 Industrial Platform with PCI and PCI Express x1; Dual LAN, VGA, Quad USB, COM1/2, HD-Audio; MiniPCI, SATA, CF onboard, 170x170mm (mini-ITX)                                                                                                                                                                                                                                                                                                                                                     | MSC CX-MB-IP1 PCBFXT       |
| 32273        | COM Express Type 2 Evaluation board with PCI and PCI Express interfaces; serial I/F controller; POST display; HD-Audio and debugging support;                                                                                                                                                                                                                                                                                                                                                                           | MSC CX-MB-EVA2 PCBFXT      |
| 1119053      | 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.                                                                                                                                                                                                                                                                                                         | MSC C6C-BT-01 HSI-001      |
| 1120173      | 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. PWM fan 80x80x15mm.                                                                                                                                                                                                                                               | MSC C6C-BT-01 HSF-001      |
| 1122653      | 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.                                                                                                                                                                                                                                                                                                                                                   | MSC C6C-BT-02 HSP-001      |
| 1122654      | 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.                                                                                                                                                                                                                                                                                                                                                                          | MSC C6C-BT-01 HSP-001      |
| Memory Modules<sup>2)</sup> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                             |
| 1110591      | DDR3 SODIMM, 2GB/1600, 256Mx64, CL9, 256Mx8 based, 1 rank, 1.35V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | HMT32556EFR8A-PBN0         |
| 1102661      | DDR3 SODIMM 4GB PC1600, 512Mx64, based on 512Mx8, single rank, 1,35V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | HMT45156AFR8A-PBN0         |

<sup>2</sup> Pre-qualified memory modules for the CPU product above