MSC CXB-8S
Intel® Core™ - 4th Generation
Type 2 Pin-out

**Description**

The MSC CXB-8S module is based on Intel’s 4th generation of Core™ processors. Compliant to the Type 2 pin-out specification it supports LVDS and VGA displays, PEG slot, USB 2.0, SATA as well as PCI bus and PATA on a COM Express module.

This product family brings a significant gain in computing and graphics performance compared to its predecessors.

Various Core i3, i5, i7 and Celeron processors are supported by this design. Besides an extensive set of interfaces and features, the MSC CXB-8S offers turbo boost capabilities for CPU and graphics controller, accelerated video encoding/decoding and 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.

- **Intel® Core™ i7-4700EQ** (quad-core, 2.4/3.4GHz),
- **Intel® Core™ i5-4400E** (dual-core, 2.7/3.3GHz),
- **Intel® Core™ i5-4402E** (dual-core, 1.6/2.7GHz),
- **Intel® Core™ i3-4100E** (dual-core, 2.4GHz),
- **Intel® Core™ i3-4102E** (dual-core, 1.6GHz),
- **Intel® Celeron® 2000E** (dual-core, 2.2GHz),
- **Intel® Celeron® 2002E** (dual-core, 1.5GHz)
- **Intel® HD Graphics 4600** (GT2)
- **Intel® HD Graphics (GT1)** with Celerons
- **Intel® 8-Series chipset**
- **Up to 16GB DDR3L-1600 SDRAM**, dual channel
- **Up to four SATA 6Gb/s mass storage interfaces**
- **One PATA/IDE mass storage interface**
- **LVDS (24 Bit, dual channel) and CRT interface**
- **Triple independent display support (option)**
- **DirectX 11.1, OpenGL 3.2, OpenCL 1.2**
- **Resolution up to 3800 x 2400**
- **Six PCI Express™ x1 lanes**
- **PCI Bus**
- **Eight USB 2.0 interfaces**
- **Trusted Platform Module**
- **UEFI Firmware**

---

**Specifications**

- **Dimensions**: 95x125
- **Power**: 35 / 55 W
- **High Performance**
Technical Data – MSC CXB-8S

Module Standard
PICMG COM Express™ Standard COM.0
Type 2 compliant interface, "basic" form factor

Core Logic, Memory
CPU
Intel® Core™ i7-4700EQ (quad-core, 2.4/3.4GHz, 6MB L3, 47/37W),
Intel® Core™ i5-4400E (dual-core, 2.7/3.3GHz, 3MB L3, 37W),
Intel® Core™ i5-4402E (dual-core, 1.6/2.7GHz, 3MB L3, 25W),
Intel® Core™ i3-4100E (dual-core, 2.4GHz, 3MB L3, 37W),
Intel® Core™ i3-4102E (dual-core, 1.6GHz, 3MB L3, 25W),
Intel® Celeron® 2000E (dual-core, 2.2GHz, 2MB L3, 37W),
Intel® Celeron® 2002E (dual-core, 1.5GHz, 2MB L3, 25W)

Intel® Technologies: AMT 9.0*, Intel® 64,
Intel® Virtualization Technology*, VT-d Virtualized I/O Support*,
Intel® Trusted Execution Technology*,
AES-Ni*, Intel® Turbo Boost Technology 2.0*

* not on all models

Chipset
Intel® 8-Series Platform Controller Hub (PCH) QM87 (i5 and i7) or
HM86 (i3 and Celeron)

Memory
2x 204-pin SO-DIMM socket for up to 16GB DDR3L SDRAM (DDR3L-
1333/1600); dual channel operation

Storage Interfaces
SATA
4x SATA-2 channels [up to 6Gb/s] with QM87 chipset; 3x SATA with
HM86 based variants

PATA
1x PATA interface

Bus Interfaces
USB
8 x USB 2.0

PCI Express™
Six channels PCI Express x1, Gen. 2
one PCI Express Graphics (PEG) x 16, Gen. 2

PCI Bus
32 Bit, 33MHz standard interface (PCI 2.3)

LPC
Low Pin Count bus for legacy interfaces

Display Interfaces
Graphics Controller
Intel® HD Graphics GT2 [4400], on processor die with i3, i5, i7
processors [supporting Graphics Turbo Boost and Accelerated
Encode/Decode]

Intel® HD Graphics GT1 with Celeron® processors

DirectX 11.1, OpenGL 3.2 and OpenCL 1.2 supported
Up to three independant displays supported

Video Memory
UMA

LCD Interface
LVDS 18/24 Bit, dual channel; shared with Embedded DisplayPort
interface

CRT Interface
Resolution up to 1920 x 2000

Miscellaneous
Display Port and HDMI Interfaces
3x Display Port/HDMI interfaces, connected to PEG signals [option]

Watchdog Timer
Initiates system reset, programmable

Fan Supply
4-pin header [12V], PWM fan speed control

Real-Time Clock
Integrated in PCH, battery external

System Monitoring
Voltage, temperature, CPU fan

Ethernet Interface
10/100/1000Base-TX [integrated in PCH, Intel® 82579LM PHY]

Audio Interface
HD audio

Security Device
Infineon Trusted Platform Module

Firmware, Software
UEFI Firmware
AMI Aptio®

Security
TPM 1.2 support, TCG compliant

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
+12V +/-10%, 5V Stby optional

Power Consumption
35W [typ.] up to 55 W [typ.]

Environment
Ambient Temperature
0° ... 60° C [operating]
-25° ... 85° C [storage]

Humidity
5 ... 95% [operating, non-condensing]
5 ... 95% [storage, non-condensing]

Mechanical
Dimensions
125mm x 95mm x13mm
## Order Reference – MSC CXB-8S

<table>
<thead>
<tr>
<th>Order Number</th>
<th>Description</th>
<th>Reference</th>
<th>Cat.</th>
</tr>
</thead>
<tbody>
<tr>
<td>47256</td>
<td>Intel® Core™ i7-4700EQ, 47/37W TDP, QM87, GbE, TPM 1.2, Type 2</td>
<td>MSC CXB-8S-008</td>
<td>tbd</td>
</tr>
<tr>
<td>47254</td>
<td>Intel® Core™ i5-4400E, 37W TDP, QM87, GbE, TPM 1.2, Type 2</td>
<td>MSC CXB-8S-005</td>
<td>tbd</td>
</tr>
<tr>
<td>47258</td>
<td>Intel® Core™ i5-4402E, 25W TDP, QM87, GbE, TPM 1.2, Type 2</td>
<td>MSC CXB-8S-012</td>
<td>tbd</td>
</tr>
<tr>
<td>47252</td>
<td>Intel® Core™ i3-4100E, 37W TDP, HM86, GbE, TPM 1.2, Type 2</td>
<td>MSC CXB-8S-004</td>
<td>tbd</td>
</tr>
<tr>
<td>47250</td>
<td>Intel® Core™ i3-4102E, 25W TDP, HM86, GbE, TPM 1.2, Type 2</td>
<td>MSC CXB-8S-003</td>
<td>tbd</td>
</tr>
<tr>
<td>47246</td>
<td>Intel® Celeron® 2000E, 37W TDP, HM86, GbE, TPM 1.2, Type 2</td>
<td>MSC CXB-8S-001</td>
<td>tbd</td>
</tr>
<tr>
<td>47248</td>
<td>Intel® Celeron® 2002E, 25W TDP, HM86, GbE, TPM 1.2, Type 2</td>
<td>MSC CXB-8S-002</td>
<td>tbd</td>
</tr>
</tbody>
</table>

1) PV = Preferred variant; OR = on Request (in OEM quantities only)

### Accessories

<table>
<thead>
<tr>
<th>Order Number</th>
<th>Description</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carrier Boards</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32367</td>
<td>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)</td>
<td>MSC CX-MB-IP1 PCBFTX</td>
</tr>
<tr>
<td>32273</td>
<td>COM Express Type 2 Evaluation board with PCI and PCI Express interfaces; serial I/F controller; POST display; HD-Audio and debugging support;</td>
<td>MSC CX-MB-EVA2 PCBFTX</td>
</tr>
<tr>
<td><strong>Cooling</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1110030</td>
<td>Passive Heatsink for C6B-8S and CXC-8S, consisting of a single-piece aluminum profile with fins, pressed in standoffs without thread (2.7mm inner diameter), screws and thermopads for the thermal contact to CPU and chipset.</td>
<td>MSC C6B-8S-01 HSI-001</td>
</tr>
<tr>
<td>1111682</td>
<td>Active Heatsink for C6B-8S and CXC-8S, consisting of a single-piece aluminum profile with fins, pressed in standoffs without thread (2.7mm inner diameter), screws and thermopads for the thermal contact to CPU and chipset. PWM fan 80x80x15mm.</td>
<td>MSC C6B-8S-01 HSF-001</td>
</tr>
<tr>
<td>1120478</td>
<td>Heatspreader for C6B-8S and CXC-8S. Single-piece aluminum profile, pressed in standoffs without thread (2.7mm inner diameter), screws and thermopads for the thermal contact to CPU and chipset. No fan, no SO-DIMM cutout.</td>
<td>MSC C6B-8S-01 HSP-001</td>
</tr>
<tr>
<td>1120479</td>
<td>Heatspreader for C6B-8S and CXC-8S. Single-piece aluminum profile, pressed in standoffs with M2.5 thread, screws and thermopads for the thermal contact to CPU and chipset. No fan, no SO-DIMM cutout.</td>
<td>MSC C6B-8S-02 HSP-001</td>
</tr>
<tr>
<td><strong>Memory Modules</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1102661</td>
<td>DDR3 SODIMM 4GB PC1600; 512Mx64, based on 512Mx8; single rank, 1,35V</td>
<td>HMT45156AFR8A-PBN0</td>
</tr>
</tbody>
</table>