**Formfactor Qseven Form Factor Rev. 2.0 compliant | 70x70 mm**

**CPU**

<table>
<thead>
<tr>
<th>Processor Type</th>
<th>Frequency</th>
<th>Clock Speed</th>
<th>L2 Cache</th>
<th>TDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel® Atom™ x7-E3950</td>
<td>2.00 GHz (Burst)</td>
<td>1.6 GHz</td>
<td>2MB</td>
<td>12W TDP</td>
</tr>
<tr>
<td>Intel® Atom™ x5-E3940</td>
<td>1.80 GHz (Burst)</td>
<td>1.6 GHz</td>
<td>2MB</td>
<td>9W TDP</td>
</tr>
<tr>
<td>Intel® Atom™ x5-E3930</td>
<td>1.80 GHz (Burst)</td>
<td>1.3 GHz</td>
<td>1MB</td>
<td>6.5W TDP</td>
</tr>
<tr>
<td>Intel® Pentium® N4200</td>
<td>2.50 GHz (Burst)</td>
<td>1.1 GHz</td>
<td>2MB</td>
<td>6W TDP</td>
</tr>
</tbody>
</table>

**DRAM**

Dual Channel | up to 8GB onboard DDR3L with 1867 MT/s

**Chipset**

Integrated in SoC

**Ethernet**

Intel® I210 (Industrial) / I211 (Commercial) Gigabit Ethernet Controller

**I/O Interfaces**

- 3x PCIe Gen2 | 1x USB 3.0/2.0 | 5x USB 2.0 | 2x SATA3 | SDx3 | LPC Bus | SMBus | I2C Bus | UART

**Mass Storage**

eMMC 5.0 onboard flash up to 64 GByte

**Sound**

Intel® High Definition Audio (Intel® HD Audio)

**Graphics**

- Intel® HD Graphics 500 with support for 4k Ultra HD displays | DirectX 12 | OpenGL 4.4 | OpenCL 2.0 | H.264, VP8, MVC, VP9, VC-1, WMV9, JPEG/MJPEG | Video decode hardware acceleration including support for 4Kp60 HEVC (H.265), H.264, VP8, VP9, VC-1, WMV9, JPEG/MJPEG | Video encode hardware acceleration including support for 4Kp30 HEVC (H.265), H.264, VP8, JPEG/MJPEG.

**LVDS**

18/24-bit Single/Dual Channel LVDS Interface, resolutions up to 1920x1200@60Hz | VESA standard or JEIDA data mapping
- Fast I/Os: SATA3, USB 3.0 and PCIe 2.0

**DisplayPort Interface (DDI)**

DisplayPort 1.2 up to 4096x2160@60Hz or HDMI 1.4b up to 3840x2160@30Hz

**MIPI-CSI**

- 1x MIPI-CSI x4 and 1x MIPI-CSI x2

**congatec Board controller**

- Multistage watchdog | non-volatile user data storage | manufacturing and board information | board statistics
- PC bus (fast mode) | 400 kHz | multi master | power loss control

**Embedded BIOS Features**

- AMI Aptio® UEFI 2.x firmware | 8 MByte serial SPI with congatec Embedded BIOS features OEM Logo | OEM CMOS Defaults | LCD Control
- Display Auto Detection | Backlight Control | Flash Update

**Power Management**

- ACPI 5.0 compliant | Smart Battery Management

**Operating Systems**

- Microsoft® Windows 10 IoT Enterprise | Microsoft® Windows 10 IoT Core | Microsoft® Windows 10 | Linux | Yocto

**Power Consumption**

Typ. application 6W...12W

**Temperature**

- Commercial : Operating: 0 to +60°C | Storage: -20 to +70°C
- Industrial: Operating: -40 to +85°C | Storage: -40 to +85°C

**Humidity**

- Operating: 10 to 90% r. H. non cond. | Storage: 5 to 95% r. H. non cond.

**Size**

70 x 70 mm (2¾” x 2¾”)
Qseven 2.0 Connector
230 Edge Finger

LVDS_A / eDP0
LVDS_B / eDP1
PCIe Port 0
PCIe Port 1
PCIe Port 2
PCIe Port 3
Ethernet
get 1x USB 3.0 + 1x USB 2.0 QuadRole + 1x USB2.0
3x USB 2.0
3x USB 2.0
get 1x USB 2.0 QuadRole + 1x USB2.0
USB 2.0
USB 2.0
USB 2.0
USB 2.0
USB 2.0
USB 2.0
USB 2.0
USB 2.0
USB 2.0
SATA Port 1.0
SD/SDIO
CAN Bus
SPI Bus
LPC Bus
SM Bus
I2C Bus
PWR Control
Fan Control
BIOS
optional
USB 3.0 Port
USB 2.0 Port
USB 3.0 Port
USB 2.0 Port
PCIe Port 2
PCIe Port 3
PCIe Port 1
PCIe Port 0
DDR3L-1867
DDR3L-1867

Intel Apollo Lake

COMPUTE UNIT

PROCESSOR CORE
Tri-gate 3-D 14nm Quad core SoC
1MB L2 cache shared by 2 cores
Core #1
Core #2
Core #3
Core #4
SSB4 2
AES

UNCORE UNIT

DISPLAY & GRAPHICS MEDIA

DirectX 12.0
OpenGL 4.3
OpenGL ES 3.0
OpenGL
Multimedia Features

HEVC
VP9
MPEG2
WMV
H.264
VP8
MJPEG
MJPEG
VC-1
DisplayPort
HD/ED
aDP

INTEGRATED I/O

SATA
USB 3.0 Port
USB 2.0 Port
USB 3.0 Port
USB 2.0 Port
PCIe Port 2
PCIe Port 3
PCIe Port 1
PCIe Port 0

Notes:
*1: PCIe 3 is available only for config x4 or no GbE
Downloaded from Arrow.com.
www.congatec.com
### Order Information

<table>
<thead>
<tr>
<th>Article</th>
<th>PN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>conga-QA5/E3950-8G eMMC32</td>
<td>015500</td>
<td>Qseven module with Intel® Atom™ x7-E3950 quad core processor with 1.6GHz core frequency up to 2.0GHz, 2MB L2 cache, 8GB 1866MT/s DDR3L onboard memory and 32GB eMMC onboard flash</td>
</tr>
<tr>
<td>conga-QA5/E3940-4G eMMC16</td>
<td>015501</td>
<td>Qseven module with Intel® Atom™ x5-E3940 quad core processor with 1.6GHz core frequency up to 1.8GHz, 2MB L2 cache, 4GB 1866MT/s DDR3L onboard memory and 16GB eMMC onboard flash</td>
</tr>
<tr>
<td>conga-QA5/E3930-2G eMMC8</td>
<td>015502</td>
<td>Qseven module with Intel® Atom™ x5-E3930 dual core processor with 1.3GHz core frequency up to 1.8GHz, 1MB L2 cache, 2GB 1866MT/s DDR3L onboard memory and 8GB eMMC onboard flash</td>
</tr>
<tr>
<td>conga-QA5/E3950 4G eMMC8</td>
<td>015503</td>
<td>Qseven module with Intel® Atom™ x7-E3950 quad core processor with 1.6GHz core frequency up to 2.0GHz, 2MB L2 cache, 4GB 1866MT/s DDR3L onboard memory and 16GB eMMC onboard flash</td>
</tr>
<tr>
<td>conga-QA5/i-E3950 8G eMMC32</td>
<td>015510</td>
<td>Qseven module with Intel® Atom™ x7-E3950 quad core processor with 1.6GHz core frequency up to 2.0GHz, 2MB L2 cache, 8GB 1866MT/s DDR3L onboard memory and 32GB eMMC onboard flash. Industrial grade temperature range from -40°C to 85°C</td>
</tr>
<tr>
<td>conga-QA5/i-E3940 4G eMMC16</td>
<td>015511</td>
<td>Qseven module with Intel® Atom™ x5-E3940 quad core processor with 1.6GHz core frequency up to 1.8GHz, 4GB 1866MT/s DDR3L onboard memory and 16GB eMMC onboard flash. Industrial grade temperature range from -40°C to 85°C</td>
</tr>
<tr>
<td>conga-QA5/i-E3930 2G eMMC8</td>
<td>015512</td>
<td>Qseven module with Intel® Atom™ x5-E3930 dual core processor with 1.3GHz core frequency up to 1.8GHz, 1MB L2 cache, 2GB 1866MT/s DDR3L onboard memory and 8GB eMMC onboard flash</td>
</tr>
<tr>
<td>conga-QA5/N3350 4G eMMC16</td>
<td>015522</td>
<td>Qseven module with Intel® Celeron™ N3350 dual core processor with 1.1GHz core frequency up to 2.4GHz, 1MB L2 cache, 4GB 1866MT/s DDR3L onboard memory and 16GB eMMC onboard flash. Industrial grade temperature range from -40°C to 85°C</td>
</tr>
<tr>
<td>conga-QA5/N4200 8G eMMC32</td>
<td>015523</td>
<td>Qseven module with Intel® Pentium® N4200 quad core processor with 1.5GHz core frequency up to 2.50GHz, 2MB L2 cache, 8GB 1866MT/s DDR3L onboard memory and 32GB eMMC onboard flash</td>
</tr>
<tr>
<td>conga-QA5/i-CSP-T</td>
<td>015530</td>
<td>Passive cooling solution for Qseven module conga-QA5 with lidded Intel Atom processor. All standoffs are M2.5mm thread</td>
</tr>
<tr>
<td>conga-QA5/i-CSP-B</td>
<td>015531</td>
<td>Passive cooling solution for Qseven module conga-QA5 with lidded Intel Atom processor. All standoffs are with 2.7mm bore hole</td>
</tr>
<tr>
<td>conga-QA5/i-HSP-T</td>
<td>015532</td>
<td>Standard heatspreader for Qseven module conga-QA5 with lidded Intel Atom processor. All standoffs are M2.5mm thread</td>
</tr>
<tr>
<td>conga-QA5/i-HSP-B</td>
<td>015533</td>
<td>Standard heatspreader for Qseven module conga-QA5 with lidded Intel Atom processor. All standoffs are with 2.7mm bore hole</td>
</tr>
<tr>
<td>conga-QA5/CSP-T</td>
<td>015534</td>
<td>Passive cooling solution for Qseven module conga-QA5 with open silicon Intel Pentium and Celeron processor. All standoffs are M2.5mm thread</td>
</tr>
<tr>
<td>conga-QA5/CSP-B</td>
<td>015535</td>
<td>Passive cooling solution for Qseven module conga-QA5 with open silicon Intel Pentium and Celeron processor. All standoffs are with 2.7mm bore hole</td>
</tr>
<tr>
<td>conga-QA5/HSP-T</td>
<td>015536</td>
<td>Standard heatspreader for Qseven module conga-QA5 with open silicon Intel Pentium and Celeron processor. All standoffs are M2.5mm thread</td>
</tr>
<tr>
<td>conga-QA5/HSP-B</td>
<td>015537</td>
<td>Standard heatspreader for Qseven module conga-QA5 with open silicon Intel Pentium and Celeron processor. All standoffs are with 2.7mm bore hole</td>
</tr>
</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>Article</th>
<th>PN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>conga-QEVAL 2.0</td>
<td>007003</td>
<td>Evaluation platform for Qseven 2.0</td>
</tr>
<tr>
<td>conga-KIT</td>
<td>077455</td>
<td>Starterkit for Qseven including conga-QEVAL, conga-LDV/EPI, conga-FPA2, Dual DVI-D ADD2 Card, ATX power supply, ...</td>
</tr>
<tr>
<td>conga-DP/HDMI 4k adapter</td>
<td>500030</td>
<td>The conga-DP/HDMI 4k adapter is used to convert the digital display interface (DDI) to the DisplayPort or HDMI connector interface</td>
</tr>
<tr>
<td>conga-Oseven/SBM3</td>
<td>025485</td>
<td>Mobility Starter Kit</td>
</tr>
<tr>
<td>conga-MCB/Qseven Cable Kit</td>
<td>14000041</td>
<td>Complete cable kit for Qseven mini carrier board</td>
</tr>
<tr>
<td>Qseven MXM Connector Aces</td>
<td>400018</td>
<td>Socket for Qseven Carrier Boards. 10pcs package. ACES standard type, SMT, lead free, 230 positions, 0.50mm pitch, 7.8mm height.</td>
</tr>
<tr>
<td>conga-LDV/EPI</td>
<td>011115</td>
<td>LVDS to DVI converter board for digital flat panels with onboard EEPROM</td>
</tr>
</tbody>
</table>

This Datasheet should be read in conjunction with "Errata sheet - congatec xA5 designs", available in the document section of congatec’s webportal.