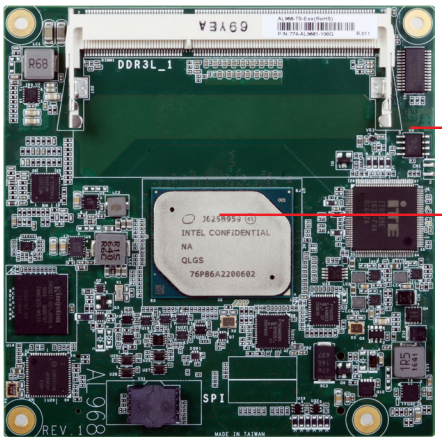
# Intel Atom® Processor E3900 Series
# COM Express® Compact

IoT Solutions Alliance

## AL968

Atom



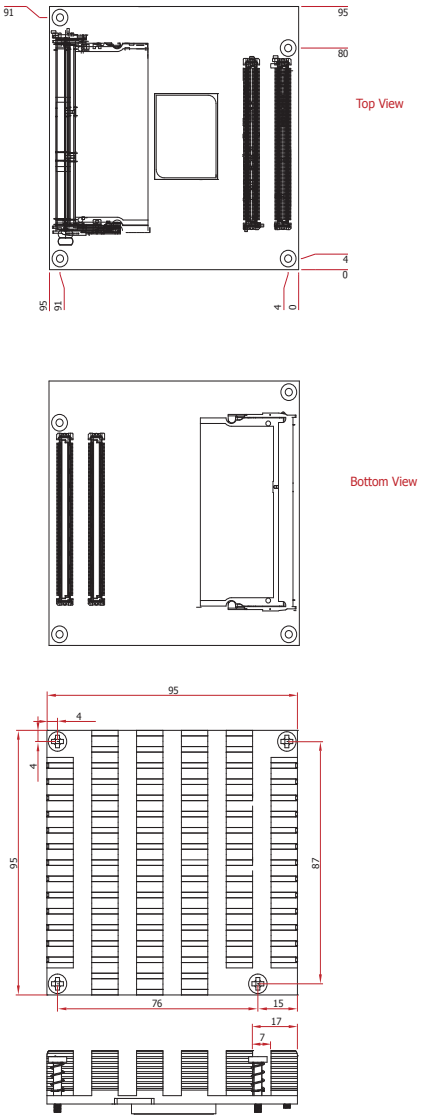

### Features

- Dual channel DDR3L 1600MHz SODIMM up to 8GB
- Three independent displays: VGA*/DDI + LVDS*/eDP + DDI
- DP++ resolution supports up to 4096x2160 @ 60Hz
- Multiple expansion: 4 PCIe x1, 1 LPC, 1 I²C, 1 SMBus, eMMC
- Rich I/O: 1 Intel GbE, 4 USB 3.0, 8 USB 2.0, 2 SATA 3.0

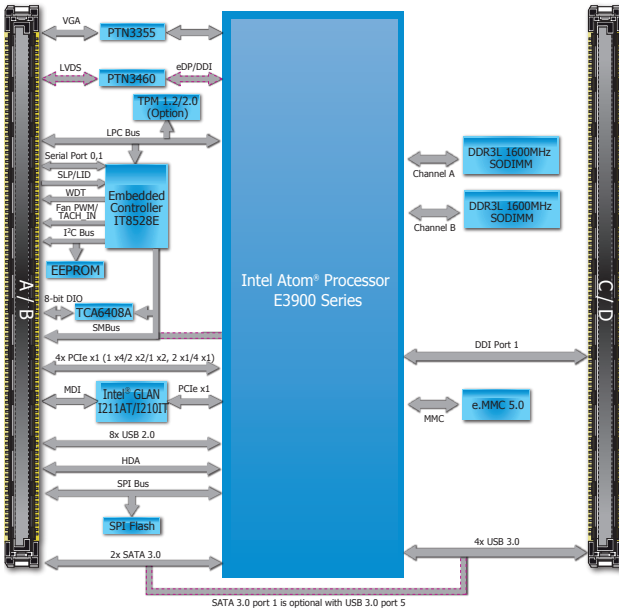
* Populated by default

85°C -40°C Wide Temperature | eMMC | 3 Displays | Fanless | R2.1 Type6

### Mechanical Drawing




### Block Diagram



## Specifications

| | | |
|---|---|---|
| **SYSTEM** | **Processor** | Intel Atom® Processor E3900 Series, BGA 1296<br>Intel Atom® x7-E3950 Processor, Quad Core, 2M Cache, 1.6GHz (2.0GHz), 12W<br>Intel Atom® x5-E3940 Processor, Quad Core, 2M Cache, 1.6GHz (1.8GHz), 9.5W<br>Intel Atom® x5-E3930 Processor, Dual Core, 2M Cache, 1.3GHz (1.8GHz), 6.5W<br>Intel® Pentium® Processor N4200, Quad Core, 2M Cache, 1.1GHz (2.5GHz), 6W<br>Intel® Celeron® Processor N3350, Dual Core, 2M Cache, 1.1GHz (2.4GHz), 6W |
| | **Memory** | Two 204-pin SODIMM up to 8GB Dual Channel DDR3L 1600MHz |
| | **BIOS** | AMI SPI 128Mbit (supports UEFI boot only) |
| **GRAPHICS** | **Controller** | Intel® HD Graphics |
| | **Feature** | OpenGL 5.0, DirectX 12, OpenCL 2.1<br>HW Decode: AVC/H.264, MPEG2, VC1, WMV9, JPEG/MJPEG, HEVC/H.265, VP8, VP9, MVC<br>HW Encode: AVC/H.264, JPEG/MJPEG, HEVC/H.265, VP8, VP9, MVC |
| | **Display** | 1 x VGA/DDI (DDI available upon request) VGA: resolution up to 1920x1200 @ 60Hz<br>1 x LVDS/eDP (eDP available upon request) LVDS: dual channel 24-bit, resolution up to 1920x1200 @ 60Hz<br>1 x DDI eDP: resolution up to 3840x2160 @ 60Hz<br>HDMI: resolution up to 3840x2160 @ 30Hz<br>DP++: resolution up to 4096x2160 @ 60HZ |
| | **Triple Displays** | VGA + LVDS + DDI DDI + eDP + DDI (available upon request) |
| **EXPANSION** | **Interface** | 4 x PCIe x1 (Gen 2)<br>1 x SDIO (available upon request)<br>1 x LPC<br>1 x $I^2C$<br>1 x SMBus<br>1 x SPI<br>2 x UART (TX/RX) |
| | **eMMC** | 1 x 8GB/16GB/32GB eMMC (available upon request) |
| **AUDIO** | **Interface** | HD Audio |
| **ETHERNET** | **Controller** | 1 x Intel® I211AT (10/100/1000Mbps) (0°C to 60°C) or<br>1 x Intel® I210IT (10/100/1000Mbps) (-40°C to 85°C) |
| **I/O** | **USB** | 4 x USB 3.0<br>8 x USB 2.0 |
| | **SATA** | 2 x SATA 3.0 (up to 6Gb/s) |
| | **DIO** | 1 x 8-bit DIO |
| **WATCHDOG TIMER** | **Output & Interval** | System Reset, Programmable via Software from 1 to 255 Seconds |
| **SECURITY** | **TPM** | Available Upon Request |
| **POWER** | **Type** | 12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode) |
| | **Consumption** | Typical: E3950: 12V @ 0.3551A (4.2612W)<br>Max.: E3950: 12V @ 1.9213A (23.0556W) |
| **OS SUPPORT (UEFI ONLY)** | | Windows: Windows 10 IoT Enterprise 64-bit Linux |
| **ENVIRONMENT** | **Temperature** | Operating: 0 to 60°C Storage: -40 to 85°C<br>-40 to 85°C |
| | **Humidity** | Operating: 10 to 90% RH Storage: 10 to 90% RH |
| | **MTBF** | 707,110 hrs @ 25°C; 416,227 hrs @ 45°C; 263,460 hrs @ 60°C<br>Calculation model: Telcordia Issue 2<br>Environment: GB, GC – Ground Benign, Controlled |
| **MECHANICAL** | **Dimensions** | COM Express® Compact 95mm (3.74") x 95mm (3.74") |
| | **Compliance** | PICMG COM Express® R2.1, Type 6 |
| **STANDARDS AND CERTIFICATIONS** | **Certification** | CE, FCC |

## Ordering Information

| Model Name | P/N | Processor | Memory | VGA/DVI | LVDS/eDP | GbE | USB 3.0 | USB 2.0 | Power | Thermal | Temp. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **AL968-BS0-E3950** | 770-AL9681-500G | x7-E3950 | 2 SODIMM | VGA | LVDS | 1 | 4 | 8 | ATX/AT | Fanless | 0 to 60°C |
| **AL968-TS0-E3940** | 770-AL9681-600G | x7-E3940 | 2 SODIMM | VGA | LVDS | 1 | 4 | 8 | ATX/AT | Fanless | -40 to 85°C |
| **AL968-BS0-E3940** | 770-AL9681-700G | x7-E3940 | 2 SODIMM | VGA | LVDS | 1 | 4 | 8 | ATX/AT | Fanless | 0 to 60°C |
| **AL968-BS0-E3930** | 770-AL9681-800G | x7-E3930 | 2 SODIMM | VGA | LVDS | 1 | 4 | 8 | ATX/AT | Fanless | 0 to 60°C |
| **AL968-BS0-N4200** | 770-AL9681-900G | N4200 | 2 SODIMM | VGA | LVDS | 1 | 4 | 8 | ATX/AT | Fanless | 0 to 60°C |

## Packing List

- 1 AL968 board
- 1 Heat sink (Height: 22.6mm) 500G~800G: A71-008104-000G<br>900G: A71-008104-010G

## Optional Items

- COM332-B carrier board kit 770-CM3321-000G
- Heat spreader (Height: 11mm) A71-808306-000G



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