

# Q7-AL

**Qseven® Standard Size Module with Intel® Atom™ E3900, Pentium® N4200 and Celeron® N3350 Processor (codename: Apollo Lake)**

## Features

- Dual or quad-core Intel® Atom™ E3900 Series or Pentium® N4200 or Celeron® N3350 Processor SoC
- Up to 8 GB LPDDR4 at 2400 MT/s
- Dual channel LVDS (18/28-bit) or 1x eDP and 1x DP
- HDMI/DP
- 2x MIPI CSI camera (2/4 lanes)
- 1x GbE
- 2x SATA 3.0
- Onboard eMMC



## Specifications

### • Core System

#### CPU

Intel® Atom™ E3950, 4 cores, 2.0 GHz, 12 W TDP  
 Intel® Atom™ E3940, 4 cores, 1.8 GHz, 9.5 W TDP  
 Intel® Atom™ E3930, 2 cores, 1.8 GHz, 6.5 W TDP  
 Intel® Pentium® N4200, 4 cores, 2.5 GHz, 6W TDP  
 Intel® Celeron® N3350, 2 cores, 2.4 GHz, 6W TDP

#### Memory

Up to 8 GB LPDDR4 at 2400 MT/s  
 Single/dual memory channel, 1-2 64bit, non-ECC

#### Embedded BIOS

AMI UEFI with CMOS backup in 8 MB SPI BIOS, Fast Boot support

#### Cache

2 MB L2 cache

#### SEMA Board Controller

Supports: Voltage/Current monitoring, Power Sequencing, Logistics and Forensic Information, Flat Panel Control, I<sup>2</sup>C Bus Control, GPIO Control, User Flash, Failsafe BIOS (dual BIOS), Watchdog Timer and Fan Control

### • Ethernet

#### Intel® MAC/PHY

1x Intel® i210IT/i211 Ethernet controller

#### Interface

1x GbE, IEEE 1588 trigger signals

### • Video

#### GPU Feature Support

9th generation Intel graphics core architecture with up to 18 execution units, 2D and 3D graphics hardware acceleration

Support for DirectX 12, OpenGL 4.2, OpenCL 1.2

Video decode HW acceleration for H.265/HEVC, H.264, MPEG2, MVC, VC-1, WMV9, JPEG/MJPEG, VP8, VP9

Video encode HW acceleration for H.265/HEVC, H.264, MPEG2, MVC, JPEG/MJPEG, VP8, VP9 (resolution depends on operating system)

#### LVDS

Dual channel LVDS (18/24-bit) or 1x eDP and 1x DP (BOM option)

#### HDMI/DP++

HDMI up to 3840 x 2160 @ 30Hz / DP 4096 x 2160 @ 60 Hz

### • Power

#### Standard Input

5.0 V DC ±5%

#### Power States

C0-C6, S0, S3, S4, S5

### • Audio

#### Chipset

Intel® HD Audio integrated in SoC

#### Ports

1x HDA/I2S for audio codec on carrier

## Specifications

### • I/O Interfaces

#### PCIe

4x PCIe x1 Gen2

#### USB 2.0

1x USB 2.0 client, 5x USB 2.0 host

#### USB 3.0

2x USB 3.0 host

#### SATA

2x SATA 3.0 (6 Gbit/s) to carrier or 1x SATA 3.0 to carrier and 1x onboard SATA-SSD

#### SDIO

1x SDIO 3.0 (4bit) to MXM2

#### Camera

2x MIPI CSI camera (2L/4L)

#### Serial

1x SPI for dual BIOS flash, 1x SPI to MXM2, 1x I<sup>2</sup>C, 1x UART, 1x SMBus, 1x LPC, 1x DB40

#### eMMC

Onboard eMMC 5.0 (4-64 GByte)

#### GPIO

8x GPIO (interrupt capable) (shared pins with LPC, BOM option)

### • Operation System

#### Standard Support

Windows 10 IOT Enterprise, Windows 10 IOT Core, Yocto Linux

#### On Request

VxWorks, Android

### • Mechanical and Environmental

#### Form Factor

Qseven Specifications v2.1

#### Dimension

Qseven, standard module size, 70 mm x 70 mm

#### Operating Temperature

Standard: 0°C to +60°C

Extreme Rugged: -40°C to +85°C

#### Humidity

5-90% RH operating, non-condensing

5-95% RH storage (and operating with conformal coating)

#### Shock and Vibration

IEC 60068-2-64 and IEC-60068-2-27, MIL-STD-202 F, Method 213B, Table 213-I, Condition A and Method 214A, Table 214-I, Condition D

#### HALT

Thermal Stress, Vibration Stress, Thermal Shock and Combined Test

### • Intelligent Middleware

#### SEMA<sup>®</sup>

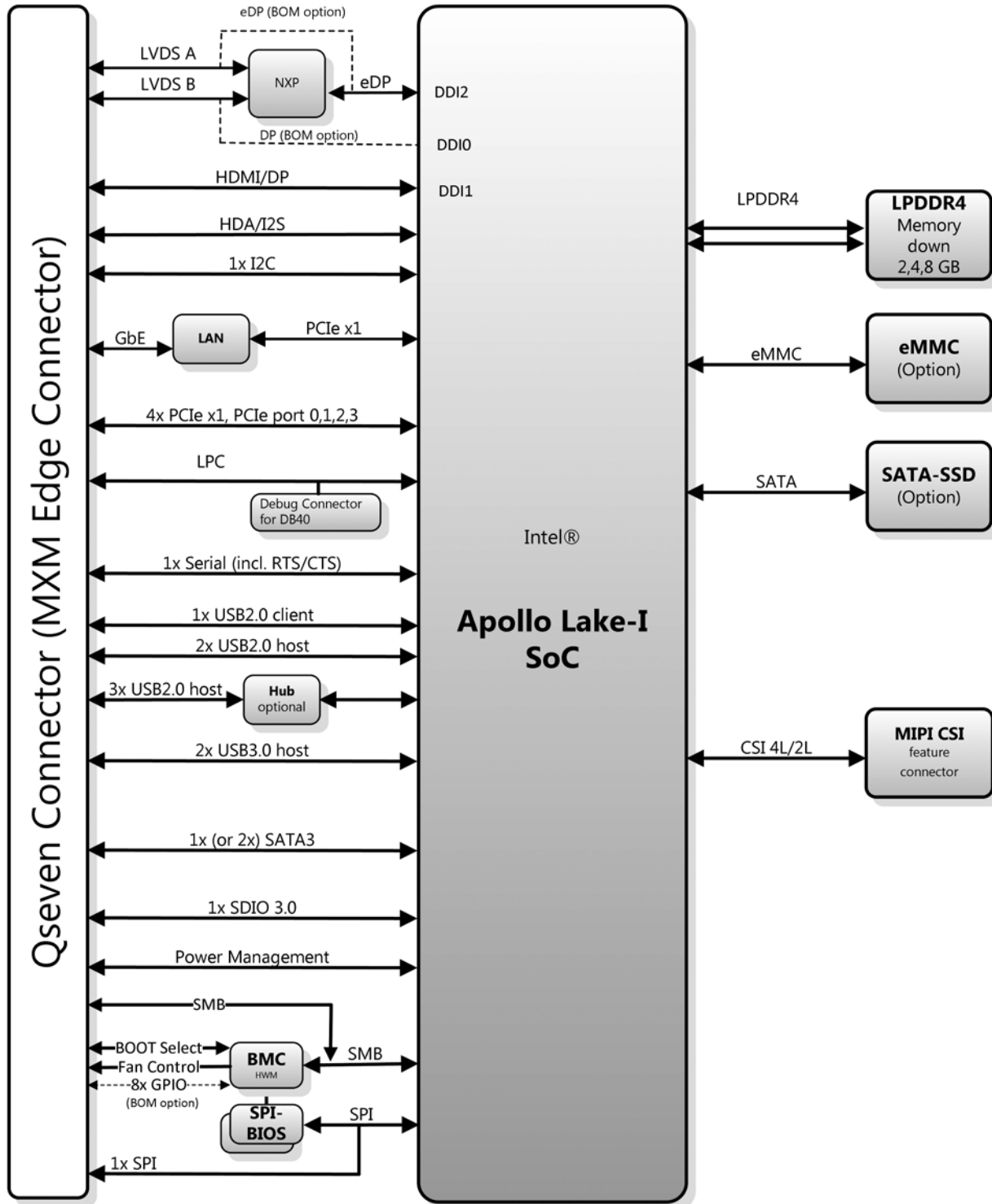


Local management, control of embedded computer systems

Extended EAPI for monitoring, controlling and analytics applications

Multiple OS support and across platforms (x86, ARM)

# Functional Diagram



## Ordering Information

- **Q7-AL-E3930-2G-8G-ER**  
Qseven Module with Intel® Atom™ E3930, dual core, 2 GB LPDDR4, 8GB eMMC, -40°C to 85°C
- **Q7-AL-E3940-2G-16G-ER**  
Qseven Module with Intel® Atom™ E3940, quad core, 2 GB LPDDR4, 16 GB eMMC, -40°C to 85°C
- **Q7-AL-E3950-8G-32G-ER**  
Qseven Module with Intel® Atom™ E3950, quad core, 8 GB LPDDR4, 32 GB eMMC, -40°C to 85°C
- **Q7-AL-N3350-4G-8G-CT**  
Qseven Module with Intel® Celeron® N3350, dual core, 4 GB LPDDR4, 8 GB eMMC, 0°C to 60°C
- **Q7-AL-N4200-8G-32G-CT**  
Qseven Module with Intel® Pentium® N4200, quad core, 8 GB LPDDR4, 32 GB eMMC, 0°C to 60°C
- **Q7-AL-E3940-2G-8GS-ER**  
Qseven Module with Intel® Atom™ E3940, quad core, 2 GB LPDDR4, 8GB SATA-SSD, -40°C to 85°C

## Accessories

- **Q7-AL-HS1**  
Heat Spreader for Q7-AL-E3930/E3940/E3950
- **Q7-AL-HS2**  
Heat Spreader for Q7-AL-N3350/N4200
- **LEC-AL/Q7-AL-HS3**  
Active Heat Sink for LEC-AL/Q7-AL

\*other configurations by request