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, I²C 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

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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 I²C, 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)

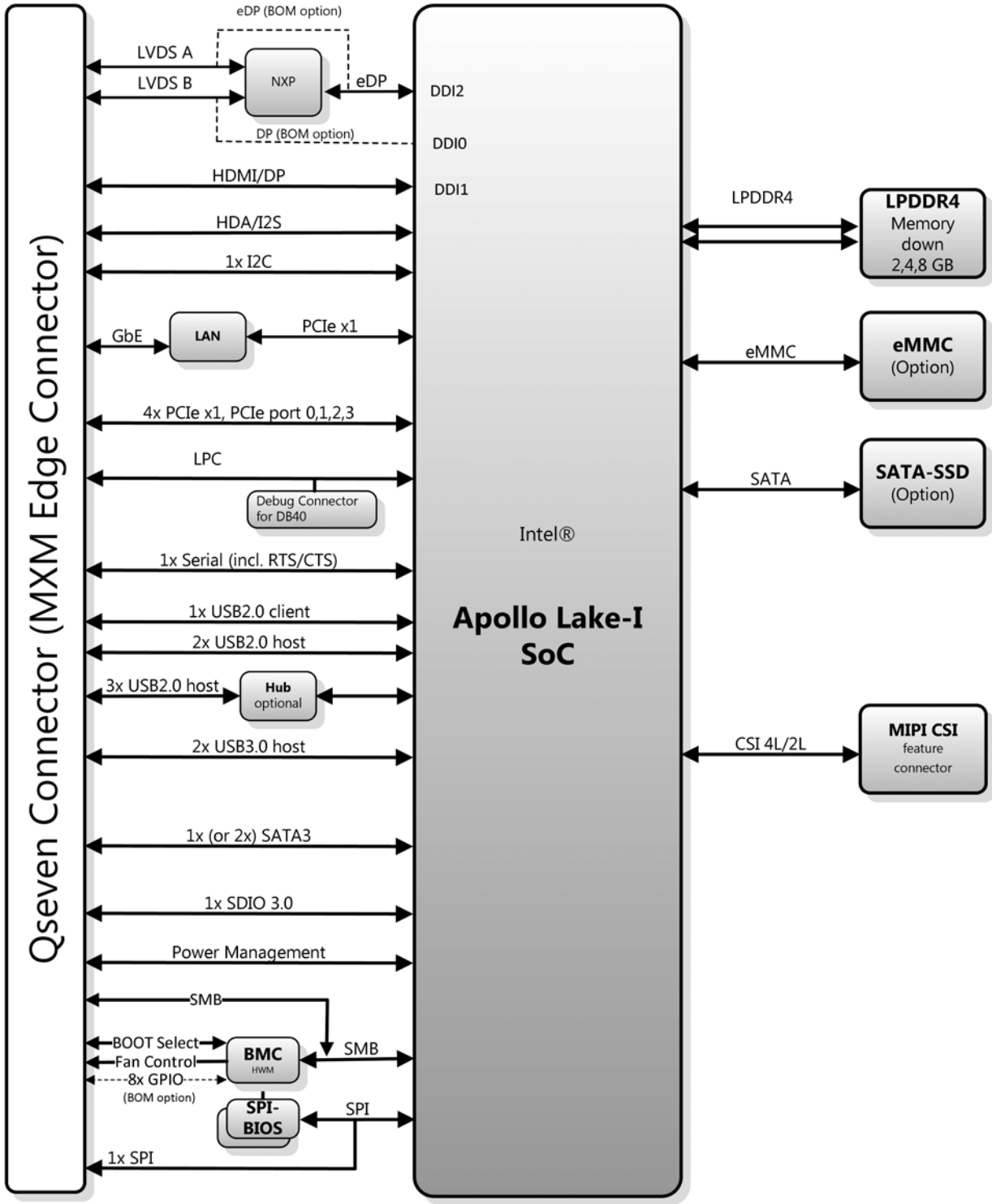
Shock and Vibration
IEC 60068-2-64 and IEC-60068-2-27, MIL-STD-202 F, Method 213B, Table 213-I, Condition A and Method 214A, Table 214-I, Condition D

HALT
Thermal Stress, Vibration Stress, Thermal Shock and Combined Test

Intelligent Middleware

SEMA®
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

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