DATA SHEET

PUMA SOM-RK3399-Q7

POWERFUL **SYSTEM-ON-MODULE** FOR VERSATILE APPLICATIONS

featuring the Rockchip RK3399 application processor

70 x 70 mm

Secure Element

64 ARMv8

2 x 2.0 GHz
4 x 1.4 GHz

up to 4 GB
DDR3-1600

HDMI 2.0
4K / 60 fps

2x MIPI-DSI
1x eDP

2x MIPI-CSI

Gigabit Ethernet

PCIe 2.1

3x USB 3.0
1x USB 2.0

CAN

BEST-IN-CLASS SCALABILITY WITH A HEXA-CORE ARM PROCESSOR

Built on the industry-leading Rockchip RK3399, the **PUMA SOM-RK3399-Q7** is a powerful module for versatile applications and supports to collect, process and output high resolution video streams.

The Rockchip RK3399 is an energy efficient, high-performance processor for computing, personal mobile internet devices and other smart device applications. Based on a big.LITTLE architecture, it integrates a dual-core Cortex-A72 and a quad-core Cortex-A53. These 64bit-capable ARMv8 processors support both the ARM Cryptographic Extension (e.g. for wire-rate AES encryption) and AdvSIMD vector processing.

A dual-channel memory interface sustains the memory bandwidths required by even the most demanding embedded applications.

Ready for visual computing and image processing applications

PUMA SOM unlocks new application areas that require visual computing and image processing. Content can be output on three independent display interfaces concurrently via HDMI 2.0, eDP and two MIPI-DSI interfaces. The ability to receive camera sensor input through two independent MIPI-CSI interfaces and to process the resulting image stream in real-time with the powerful ARM processor cores enables a new class of vision and image-analytics applications.

The RK3399 processor supports multi-format video decoding (including H.264 and H.265 at 2160p / 60 fps) and video encoding. An embedded high-performance ARM Mali T-864MP4 GPU supports OpenGL ES1.1/2.0/3.0/3.1 and OpenCL. A dedicated 2D hardware engine provides offloading for image scaling, rotation and window composition.

Connect to networks at Gigabit Ethernet speed

Gigabit Ethernet is a built-in peripheral of the RK3399 which ensures wire-rate throughput without any artificial performance bottlenecks and utilizes the full capabilities of DMA to the main memory.

Connecting to industrial I/O modules through a four-lane PCI-Express interface

Industrial applications often require access to customer-specific I/O fabrics or programmable logic resources. With **PUMA SOM-RK3399-Q7**, customer-specific and standard off-the-shelf peripherals can be connected through a four-lane PCI-Express 2.1 interface. On top of this, **PUMA SOM** makes it easy to build application-specific PCIe accelerator cards by configuring it as a PCIe endpoint.

Enabling high-bandwidth connections through USB 3.0 SuperSpeed ports

As a high-bandwidth interconnect to external peripherals and storage devices, **PUMA SOM** supports three USB 3.0 (with one port operating either in host or device mode) and one legacy USB 2.0 ports. Utilizing USB 3.0 SuperSpeed, applications can transfer up to 5 Gb/s per port.

State-of-the-art security for your assets

PUMA SOM-RK3399-Q7 features a Secure Element in addition to the capability to enable a Secure Boot mechanism. This Secure Element is based on the GlobalPlatform 2.2.1-compliant JavaCard environment. Secure Boot guarantees that only signed images can run on the device.

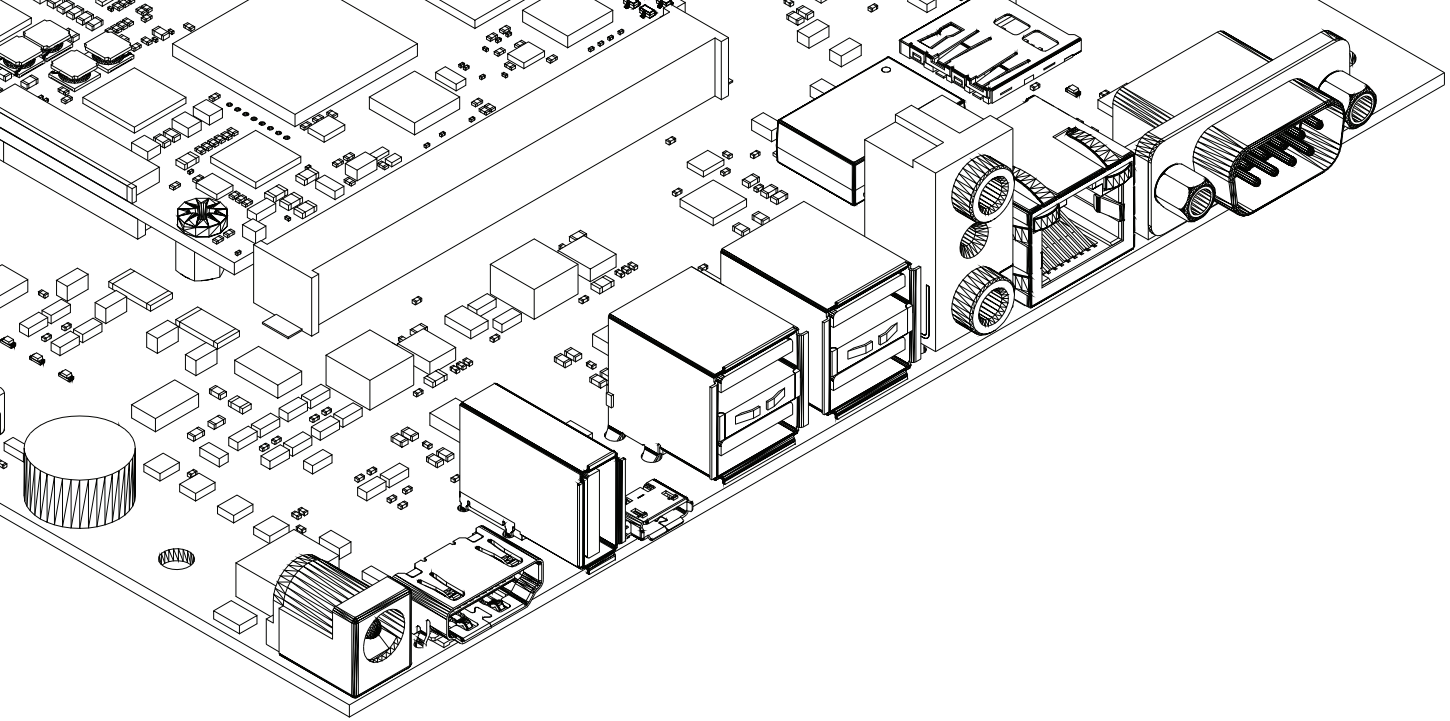
Enjoy the peace of mind that comes with a government-grade security solution for all identification, key-storage and asset-protection requirements. The Common Criteria (EAL6+) certified security module ensures that you never have to sacrifice security for performance again.

Designed and supported in Vienna, Austria

Every module we design is based on our expertise in system-level design, embedded software engineering and performance engineering. Our experienced engineering team provides services to complement your in-house design resources and shorten your time to market.

TECHNICAL SUMMARY

Form factor	Q7
Processor	Rockchip RK3399 Hexa-Core ARM Cortex-A72/A53, up to 2.0 GHz 2x Cortex-A72 (48 KB+32 KB L1 cache and 1024 KB L2 cache) 4x Cortex-A53 (32 KB+32 KB L1 cache and 512 KB L2 cache) 2x ARM Cortex-M0 co-processors
GPU	ARM Mali T864 MP4
VPU	Video decoder: H.265, H.264, VP9 up to 4K / 60 fps Video encoder: H.264 up to FullHD / 30 fps
Memory	DDR3, up to 4 GB on-module
NOR Flash	32 Mbit SPI NOR flash on-module
Memory	up to 128 GB eMMC on-module
SD Card	SDIO interface for external SD Card
Ethernet	10/100/1000 Mbps with an on-module triple-speed GbE PHY
USB	2x USB 3.0 SuperSpeed host 1x USB 3.0 dual-role 1x USB 2.0 host
Display	1x HDMI 2.0, up to 4K / 60 fps 2x MIPI-DSI, each up to 2560 x 1600 / 60 fps 1x eDP
Camera	1x MIPI-CSI, 4 lanes with 1.5 Gb/s per lane, on Q7 connector 1x MIPI-CSI, 4 lanes with 1.5 Gb/s per lane, on slim 34 pin connector
CAN	1x CAN via on-module communication offload controller for CAN
PCI-Express	1x PCIe 2.1, 4 lanes with up to 5 Gb/s per lane
Additional Interfaces	UART, GPIO, I2S, I2C, SMBus, SPI, FAN, RTC
Security	ARMv8 Cryptography Extensions Secure Element with Global Platform 2.2.1 compliant JavaCard environment (EAL6+ certified)
Operating System	Linux (Debian and Yocto)
Power Management	Dynamic frequency and voltage scaling for thermal and power management
Power Supply	Operates directly from a single 5 V supply
Consumption	⩽ 15W
Operating environment	Commercial 0ºC to 60ºC Industrial -20ºC to 85ºC
Dimensions	70 mm x 70 mm (2.75" x 2.75")



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Datasheet: "PUMA SOM-RK3399-Q7" (Rev. 1.5, 12/2023)