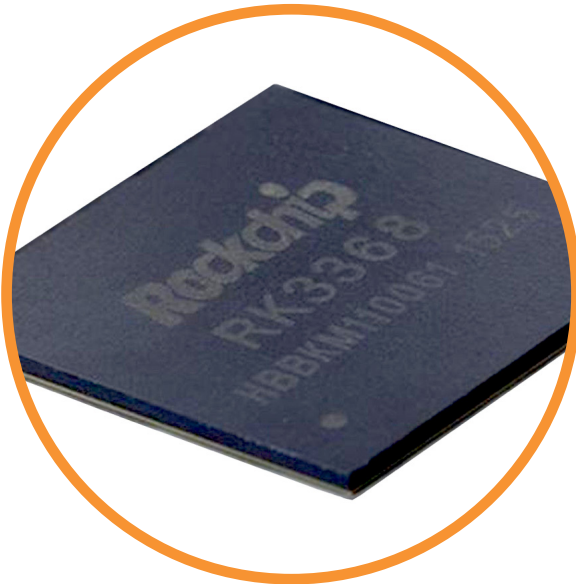


DATASHEET

μQseven System-on-Module Octa-Core ARM Cortex-A53

featuring the **Rockchip RK3368** application processor



40x70mm
μQseven



Secure
Element



ARMv8



8x 1.2GHz



up to 4GB
DDR3-1600



HDMI 2.0
2160p



eDP



MIPI-DSI



1 ch LVDS



MIPI-CSI



Gigabit
Ethernet



4x USB2.0



CAN

Unrivalled processing density in the micro-Qseven form-factor

Built on the octa-core Rockchip RK3368 applications processor, the **RK3368-uQ7** redefines the expectations for processing density available in a micro-Qseven (40mm x 70mm) form-factor module. It features 8 ARM Cortex-A53 cores, Gigabit Ethernet, a PowerVR Series 6 GPU, up to 4GB of DDR3-1600 main memory and up to 128GB of eMMC storage flash.

The RK3368 is a low power, high performance processor for computing, personal mobile internet devices and other smart device applications. Based on a big.LITTLE architecture, it integrates a two clusters of quad-core Cortex-A53: each cluster has an independent L2 cache and can be clocked and powered independently. The 64bit-capable ARMv8 Cortex-A53 cores support both the ARM Cryptographic Extension (for wire-rate AES cryptography) and AdvSIMD vector processing.

Ready for visual computing and image processing applications

The **RK3368-uQ7** module unlocks new application areas that require visual computing and image processing.

Content can be output on 2 independent display interfaces concurrently via HDMI 2.0, eDP, a MIPI-DSI and single-channel LVDS interface. The ability to receive camera sensor input through a MIPI-CSI interface and to process the resulting imagestream in real-time with the powerful ARM processor cores enables vision and image-analytics applications.

The RK3368 supports multi-format video decoding (including H.264 at 2160p30 and H.265 at 2160p60) and video encoding. An embedded high-performance Imagination Technology PowerVR Series 6 “Rogue” 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

The **RK3368-uQ7** module continues the design paradigm of our other embedded products. Gigabit Ethernet is a built-in peripheral of the RK3368 which ensures wire-rate throughput without any artificial performance bottlenecks and utilises the full capabilities of DMA to the main memory.

State-of-the-art security for your assets

The **RK3368-uQ7** features a secure element featured in all our system-on-module products. Enjoy the peace of mind afforded by a government-grade security solution for all identification, key-storage and asset-protection requirements. A Common Criteria (EAL4+) certified security module ensures that you will never again have to sacrifice security for performance.

Built on a GlobalPlatform 2.2.1 compliant JavaCard environment, the **RK3368-uQ7** module provides a trusted foundation for security applications including digital asset protection, secure key-storage and remote device authentication.

Designed and supported in Vienna, Austria

Every module we design is backed by our expertise in system-level design, embedded software engineering and performance engineering. Our experienced engineering team offers engineering services to augment your in-house design resources—bringing your design faster to market.

Technical Summary

Form factor	μQseven 2.1
Processor	Rockchip RK3368 Octa-Core ARM Cortex-A53, up to 1.2GHz 4x Cortex-A53 (32KB+32KB L1 cache and 512KB L2 cache) 4x Cortex-A53 (32KB+32KB L1 cache and 256KB L2 cache) Imagination Technologies PowerVR SGX6110 GPU Multi-format video encoding/decoding co-processor H.264 decoding up to 2160p30 H.265 decoding up to 2160p60 video encoding up to 1080p30
Memory ¹	DDR3-1600, up to 4GB on-module
NOR Flash ²	SPI NOR flash on-module
eMMC Flash ³	Up to 128GB eMMC on-module
Ethernet	10/100/1000 Mbps (with an on-module triple-speed GbE PHY)
USB	1x USB 2.0 dual-role port 3x USB 2.0 host port
Display ^{4,5,6}	HDMI 2.0, up to 4K (60fps) LVDS (single-channel) MIPI-DSI Embedded DisplayPort (eDP), up to 4 lanes (2.7Gb/s each)
Camera ⁷	MIPI-CSI, each with 4 lanes (up to 1Gb/s per lane)
CAN	On-module communication offload controller for CAN
Additional Interfaces	UART, 8x GPIO, I ² S, I ² C, SMBus, SPI, FAN
Security Module ⁸	Global Platform 2.2.1 compliant JavaCard environment On-module state-of-the-art, EAL4-certified smartcard controller
Operating Systems	Linux Android
Power Management	DVFS for thermal and power management
Power Supply	Operates from a single 5V supply
Consumption	< 9W
Operating environment	Commercial 0°C to 60°C Industrial -20°C to 85°C
Dimensions	40mm x 70mm (1.575" x 2.75")

¹ Orderable memory configurations: 512MB, 1GB, 2GB (standard configuration), 4GB

² Orderable SPI NOR flash configurations: 16Mb (standard configuration), 32Mb, 64Mb, 128Mb

³ Orderable eMMC flash configurations: 8GB (standard configuration), 16GB, 32GB, 64GB, 128GB

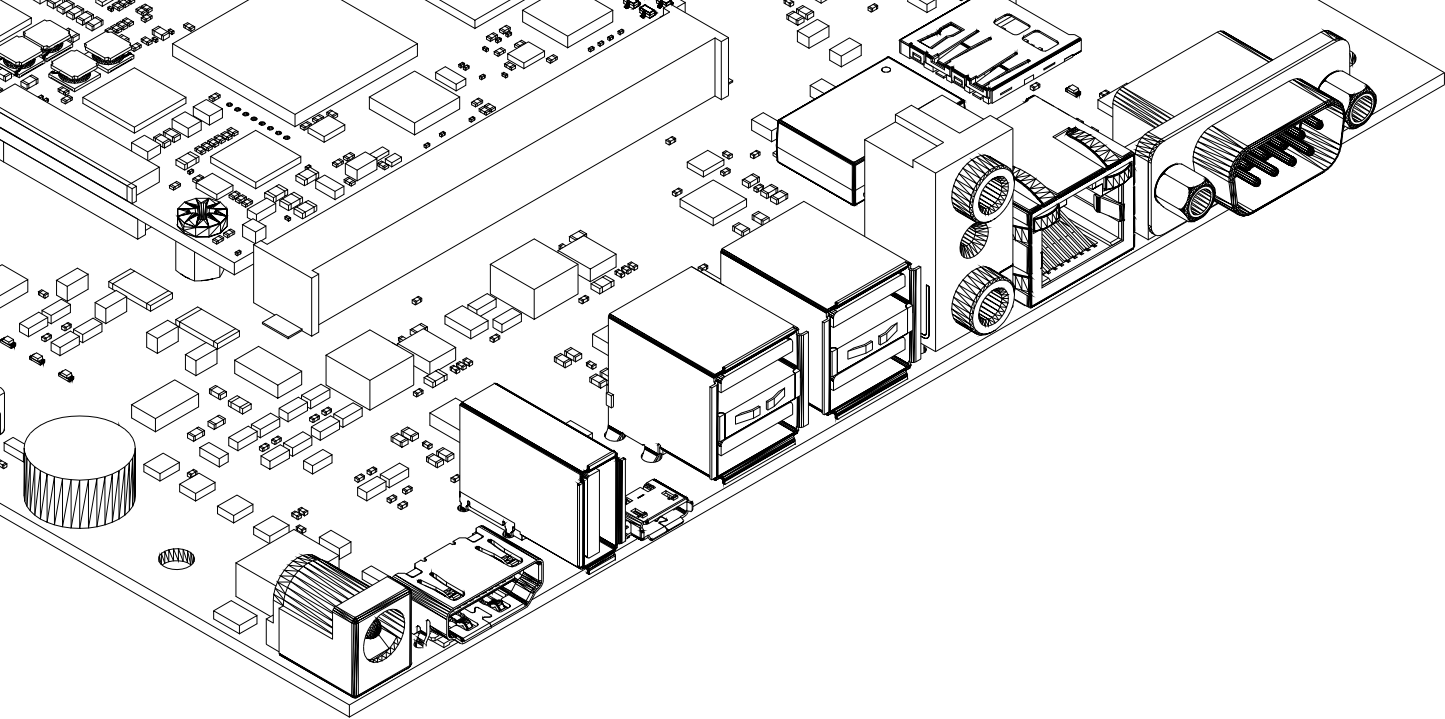
⁴ The RK3368 supports two concurrent active display output channels.

⁵ LVDS and MIPI-DSI share the QSeven "LVDS-A" pin-group on the MXM-230 connector.

⁶ Embedded DisplayPort is available through proprietary pins (from the PCI-Express pin-group).

⁷ MIPI-CSI is available through the QSeven "LVDS-B" pin-group on the MXM-230 connector.

⁸ The security module is an application-specific configuration option.



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