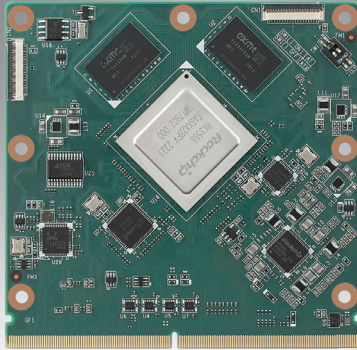


# ROM-6881

## Rockchip RK3588 Cortex®-A76 and A55 SMARC 2.1 Computer-on-Module



### Features

- Rockchip RK3588 Arm Quad Cortex-A76 2.4GHz and Quad Cortex-A55 1.8 GHz
- Onboard 4/8 GB LPDDR4 memory and 32/64 GB eMMC
- Supports 8K @ 60 fps H.265/VP9 video decoding and 8K @ 30 fps H.265/H.264 video encoding
- Supports HDMI, DP, eDP and LVDS/DSI
- 4 x PCIe 3.0, dual gigabit LAN, 2 x USB 3.0, USB2.0 OTG, SATA 3.0, 2 x CAN, 4 x MIPI-CSI, 3 x UART
- Supports Linux Debian11 and Android13



### Introduction

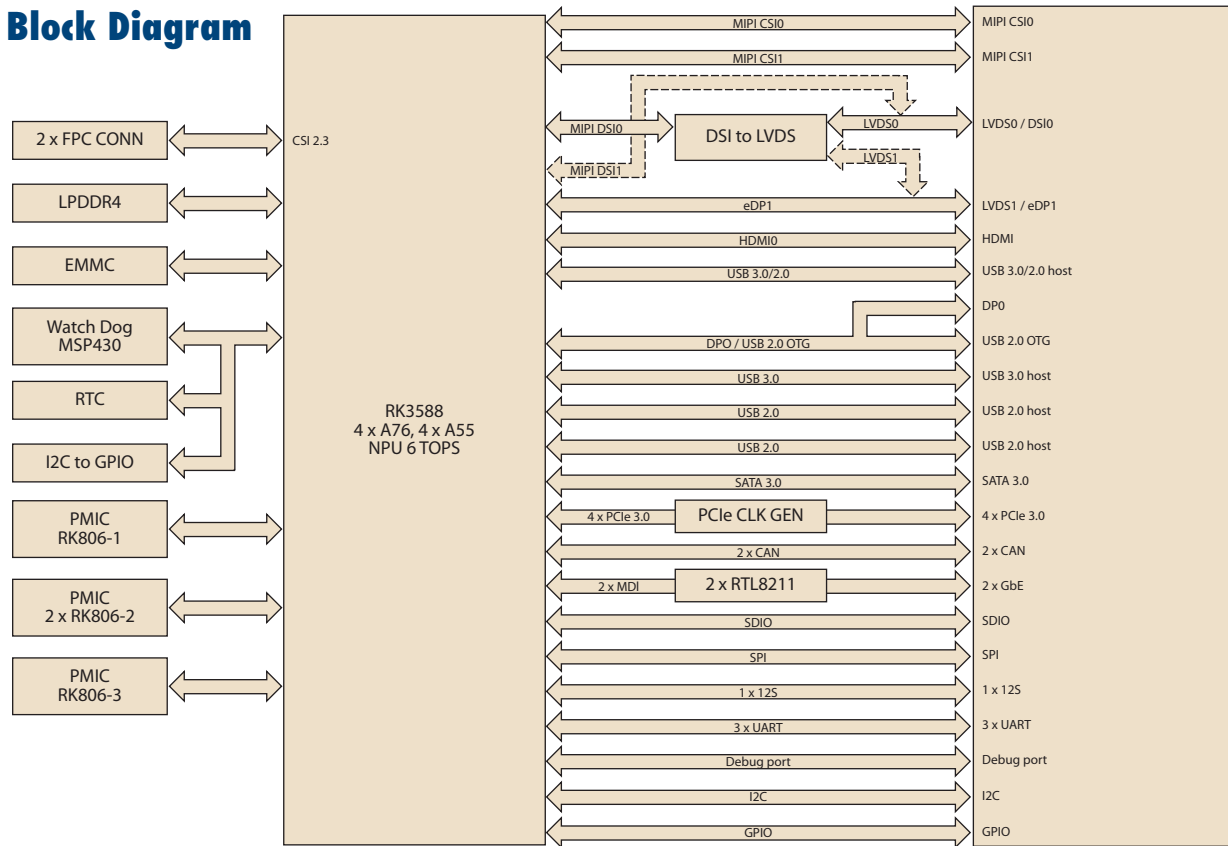
The Advantech ROM-6881 SMARC 2.1 Computer-on-Module is powered by a Rockchip RK3588 SoC which includes Quad Arm Cortex-A76 and Quad Cortex-A55 processors, 6Tops NPU and a high-performance Arm Mali-G610 3D graphics engine. ROM-6881 supports 8K @ 60 fps H.265/VP9 video decoding, and 8K @ 30 fps H.265/H.264 video encoding. It also provides a rich display interface supported with HDMI, DP, eDP, LVDS/MIPI-DSI to meet different display requirements. ROM-6881 offers various high-speed interfaces, including 2 x USB 3.0, 4 x PCIe 3.0, SATA 3.0, Gigabit Ethernet, CAN, and MIPI-CSI. These interfaces can meet a variety of high-rate transmission applications, Wi-Fi 6, and wireless 5G connectivity targeted at big data and other industrial applications.

The ROM-6881 is paired with the Advantech SOM-DB2510 SMARC2.1 development board for faster end-product peripheral integration and time-to-market. The reference schematics and layout checklist documentation for carrier board development will be provided along with the open-sourced Linux BSP, test utilities, hardware design utilities, and reference drivers.

### Specifications

Form Factor		SMARC2.1	
Processor System	CPU	Rockchip RK3588 Arm Quad Cortex-A76 2.4 GHz and Quad Cortex-A55 1.8 GHz	
	NPU	Up to 6.0 Tops. Support: TensorFlow, Caffe, Tflite, Pytorch, Onnx NN, Android NN, etc.	
Memory	Technology	LPDDR4- 3733 MT/s	
	Capacity	Onboard 4/8 GB LPDDR4, maximum supported is 32 GB	
	Flash	32/64 GB eMMC NAND Flash for OS and boot loader	
Graphics	LVDS	1 x single channel LVDS (default) or 1 x dual channel LVDS, up to 1920 x 1200 (BOM option)	
	HDMI	1 x HDMI 2.1	
	DP	1 x DP 1.4	
	eDP	1 x eDP	
	MIPI-DSI	1 x MIPI-DSI (BOM option, shared with LVDS0)	
	Graphics Engine	Arm Mali-G610 MP4 GPU, high-performance OpenGL ES 1.1, 2.0 and 3.2, OpenCL 2.2, Vulkan 1.2, etc.	
	H/W Video Codec	Decoder: Decoder: H.265/VP9 8K @ 60 fps, H.264 8K @ 30 fps, H.263, VC-1, VP8, MVC, AV1, MPEG-4/2/1 Encoder: H.265/H.264 8K @ 30 fps, parallel encoder for multi-channel, lower resolution	
Ethernet	Chipset	2 x RTL8211FS	
	Speed	2 x 10/100/1000 Mbps	
RTC	RTC	Yes	
WatchDog Timer		HW watchdog by MCU. 1~6527s, default 60s, power on/off 1s	
I/O	PCIe	4 x PCIe 3.0, 1 lane	
	SATA	1 x SATA 3.0	
	USB	2 x USB 3.0 signal, 3 x USB 2.0, 1 x USB 2.0 OTG	
	Audio	1 x I <sup>2</sup> S	
	SPDIF	-	
	SDIO	1	
	Serial Port		1 x 2-wire UART for debugging
			1 x 2-wire UART 2 x 4-wire UART
	SPI	2	
	CAN	2 x CAN 2.0	
	GPIO	12	
	I <sup>2</sup> C	5	
	Camera Input	2 x MIPI CSI (1 x 2 lane, 1 x 4 lane) 2 x MIPI CSI by FCC CONN on board (4 lane)	
	System Bus	-	
Touch	-		
Keypad	-		
Power	Power Supply Voltage	4.75 V ~ 5.25 V DC source	
	Power Consumption	8.32W @ 5V (Max), 1.34W @ 5V (Idle)	
	Operating Temperature	0°C ~ 60°C / -40°C ~ 85°C	
Environment	Operating Humidity	5 ~ 95% relative humidity, non-condensing	
	Dimensions (W x D)	82 mm x 80 mm	
Mechanical			
Operating System		Linux Debian11 and Android13	
Certifications		CE/FCC Class B	

### Block Diagram



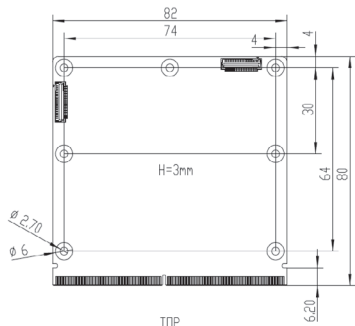
### Ordering Information

Part No.	CPU	Memory	Flash Memory	UART	LAN	USB3.0/2.0	Display	PCIe 3.0	SD	SATA 3.0	I <sup>2</sup> C	SPI	CAN	Operating Temperature
ROM-6881CO-SFA1	RK3588	4 GB	32 GB	1 x Debug 3 x UART (1 x 2-wire, 2 x 4-wire)	2	2 x USB 3.0 signal 3 x USB 2.0 1 x USB 2.0 OTG	1 x HDMI 1 x DP 1 x single channel LVDS 1 x eDP	4	1	1	5	1	2	0°C ~ 60°C
ROM-6881WO-SFA1	RK3588J	4 GB	32 GB	1 x Debug 3 x UART (1 x 2-wire, 2 x 4-wire)	2	2 x USB 3.0 signal 3 x USB 2.0 1 x USB 2.0 OTG	1 x HDMI 1 x DP 1 x single channel LVDS 1 x eDP	4	1	1	5	1	2	-40°C ~ 85°C

### Development Board

Part No.	Description
SOM-DB2510-R0A1	Development board for SMARC v2.1 RISC Module series

### Dimensions



### Optional Accessories

Part No.	Description
1701200220	Debug port cable
1970005826N001	Heat spreader
1970005845T001	Semi-heat-sink for 0°C ~ 60°C
TBD	Semi-heat-sink for -40°C ~ 85°C
1930004835	Screws for heat spreader and semi-heat-sink
96PSA-A36W12R1-3	ADAPTER (100 V - 240 V, 36 W, 12 V, 3 A)
1700001524	Power cord 3P (UL 10 A, 125 V) 180 cm
170203183C	Power cord 3P Europe (WS-010 + WS-083) 183 cm
1700008921	Power cord 3P PSE 183 mm
170203180A	Power cord 3P UK (2.5 A / 3 A, 250 V) 1.83 m
SQF-ISDM1-16G-21C	SQ Flash SD card UHS-I MLC 16 GB (0°C ~ 70°C)
SQF-ISDM1-16G-21E	SQ Flash SD card UHS-I MLC 16 GB (-40°C ~ 85°C)
AIW-154BN	Wi-Fi 802.11ac+BT5.0 NXP 88W8997 M.2 2230 PCIe+UART
1750008671-01	Dipole Ant.SMA/M-R 2.4/5G 2.5/4dBi BLK 109 mm
1750007965-01	Antenna cable, SMA (M) to MHF 4, 300 mm
968AD00479*	4G module LTE Cat 4 for China
1750007990-01	Antenna 4G/LTE full band L=11 cm 50 Ohm
1750006009	Antenna cable SMA (F) to MHF 1.32 25 cm

\*Please contact us to get the suitable cellular module for your region.