
Radxa ROCK S0

A Tiny but Full-Featured SBC

Revision 1.1

2023-12-08



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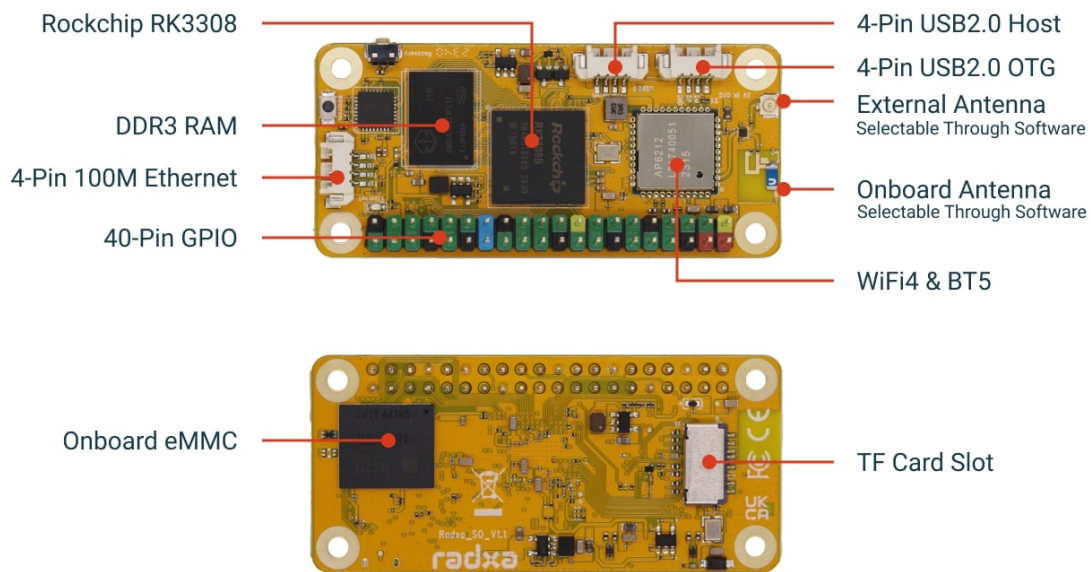
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1 Revision Control Table

Version	Date	Changes from previous version
1.0	26/04/2023	First version
1.1	08/12/2023	First version

2 Introduction

Radxa ROCK S0 is a Single Board Computer (SBC) in an ultra-tiny form factor that offers class-leading performance while leveraging outstanding mechanical compatibility. The Radxa ROCK S0 offers makers, IoT enthusiasts, hobbyists, PC DIY enthusiasts and others a reliable and extremely capable platform for building and tinkering their ideas into reality.



3 Specifications

3.1 Hardware

- Rockchip RK3308B SoC
- Quad Cortex-A35 ARM 64bits processor frequency up to 1.0GHz
- 256MB / 512MB DDR3
- 2GB / 4GB / 8GB onboard eMMC
- WiFi 4 / BT 5.0 with BLE
- Onboard or External Antenna Configured by Software

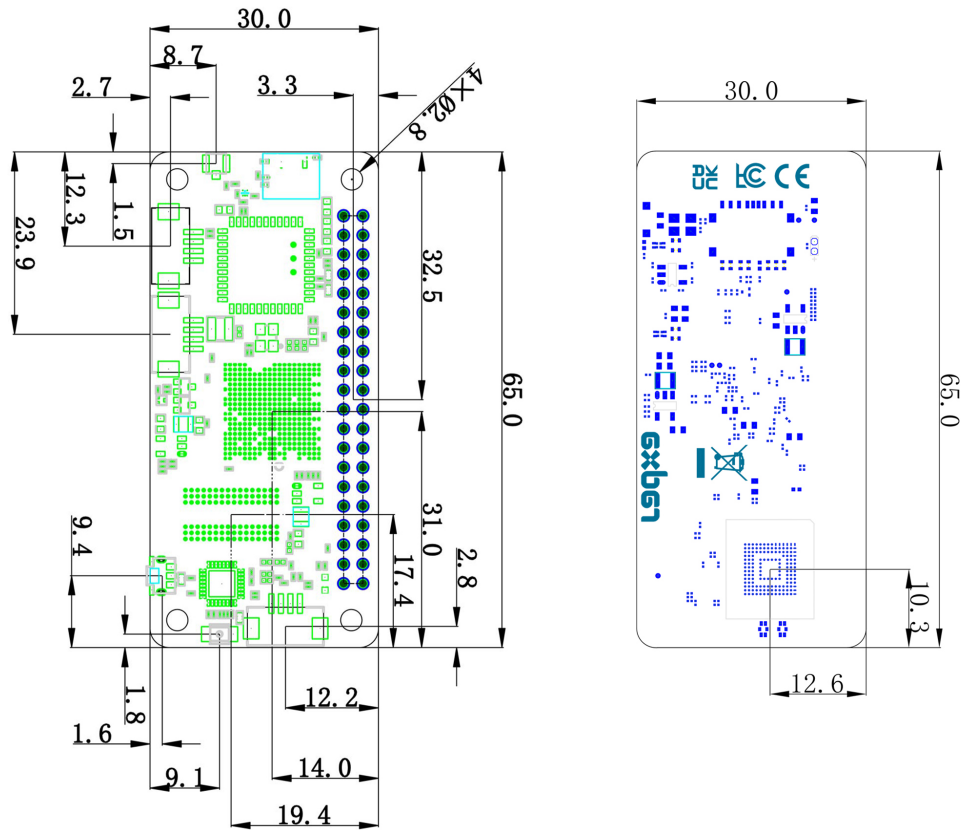
3.2 Interfaces

- 1x USB2.0 OTG via 4-Pin MX 1.25mm connector
- 1x USB2.0 HOST via 4-Pin MX 1.25mm connector
- 1x Maskrom key
- 1x Reset key
- 1x 100M Ethernet RJ45 via 4Pin MX 1.25mm connector
- 1x TF Card Slot
- 40p GPIO with the signal available:
 - I2C x4
 - PWM x3
 - SPI x2
 - UART x3
 - I2S0 x1
 - 5V DC power in x2
 - 3.3V DC power in x2

3.3 Software

- ARMv8 Instruction Set
- Debian/Ubuntu Linux support
- Hardware access/control library for Linux

4 Mechanical Specification



5 Electrical Specification

5.1 Power Requirements

The Radxa ROCK S0 supports DC +5V voltage:

- Power adapter with 5V/1A on the USB OTG connector
- +5V input from GPIO header

6 Peripherals

6.1 GPIO Interface

Radxa ROCK S0 offers 40P GPIO expansion which is compatible with most accessories on the market.

6.1.1 GPIO Alternate Functions

Func4	Func3	Func2	Func1	Pin#	Pin#	Func1	Func2	Func3
			+3.3V	1	2	+5.0V		
		I2C1_SDA	GPIO0_B3	3	4	+5.0V		
		I2C1_SCL	GPIO0_B4	5	6	GND		
	PDM_CLK_M_M2	I2S0_8CH_MCLK	GPIO2_A4	7	8	GPIO2_A1	UART0_TX	SPI0_MOSI
			GND	9	10	GPIO2_A0	UART0_RX	SPI0_MISO
	I2C3_SDA_M0	PWM2	GPIO0_B7	11	12	GPIO2_A5	I2S0_8CH_SCLK_TX	
	I2C3_SCL_M0	PWM3	GPIO0_C0	13	14	GND		
		SPDIF_TX	GPIO0_C1	15	16	GPIO2_B2	I2S0_8CH_SDO1	
			+3.3V	17	18	GPIO2_B1	I2S0_8CH_SDO0	
SPI2_MOSI	UART2_TX_M0	UART1_RTSN	GPIO1_C7	19	20	GND		
SPI2_MISO	UART2_RX_M0	UART1_CTSN	GPIO1_C6	21	22	GPIO2_A7	I2S0_8CH_LRCK_TX	
SPI2_CLK	I2C0_SDA	UART1_RX	GPIO1_D0	23	24	GPIO1_D1	UART1_TX	I2C0_SCL
			TBD	25	26	TBD		
			TBD	27	28	TBD		
			TBD	29	30	TBD		
			TBD	31	32	TBD		
			TBD	33	34	TBD		
			TBD	35	36	TBD		
			TBD	37	38	TBD		
			TBD	39	40	TBD		

6.2 USB

The Radxa ROCK S0 features a 1x USB2 HOST in a 4P MX connector, with downstream USB current limited to approximately 500mA.

The Radxa ROCK S0 is equipped with 1x USB2 OTG port within a 4P MX connector, offering versatile power options through a 5V PSU or a PC/Laptop USB port, while also providing data access.

6.3 Network

Radxa ROCK S0's onboard wireless module delivers 802.11 b/g/n Wireless LAN (WiFi4) and BT5 with BLE capabilities.

Radxa ROCK S0 provides a 10/100 Mbit Ethernet connection through a 4P MX connector for reliable wired networking.

6.4 Temperature Range and Thermals

The recommended ambient operating temperature range is 0 to 50 degrees Celcius.

The Radxa ROCK S0 will operate perfectly well without any extra cooling and is designed for sprint performance - expecting a light use case on average and ramping up the CPU speed when needed. If a user wishes to load the system continually or operate it at a high temperature at full performance, further cooling may be needed.

7 Availability

Radxa guarantees availability of the Radxa ROCK S0 until at least September 2029.

8 Support

For support please see the hardware documentation section of the [Radxa Wiki](#) website and post questions to the [Radxa forum](#).