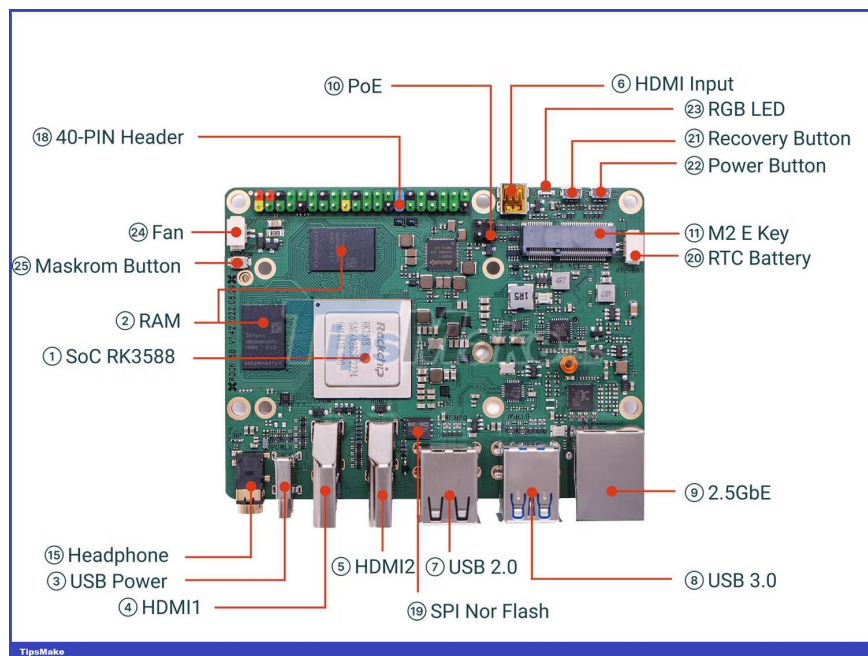


Should I buy Rock 5 or Raspberry Pi 4?

The Radxa Rock 5B promises a whole new level of performance for single-board enthusiasts. It is better equipped in terms of hardware and ports, and boasts a color-coded 40-pin GPIO header.

If you're struggling to source Raspberry Pi 4, you might be wondering if Radxa's latest board is a good alternative.

What are the specifications of the Radxa Rock 5B?



For a long time, many Raspberry Pi enthusiasts have turned to alternative boards when they need features that the Raspberry Pi models do not provide. In the case of the Radxa Rock 5B, you get a much more powerful feature than the flagship Raspberry Pi 4.

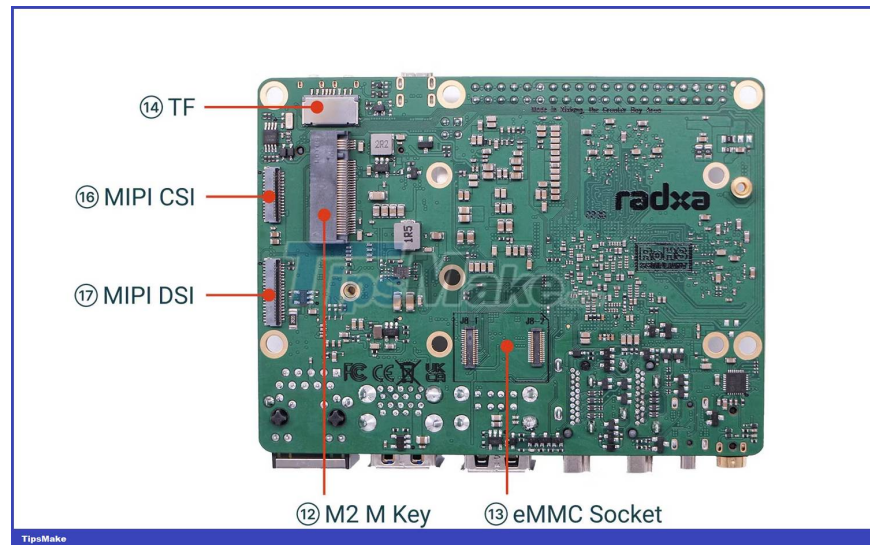
Radxa Rock 5B is based on the 8-core Rockchip RK3588 chip system, many times faster than Raspberry Pi 4. Rock 5B's SoC features two high-performance, low-power processors: quad-core ARM Cortex-A76 MPCore and quad-core ARM Cortex-A55 MPCore, both featuring cached for optimized application processing.

The integrated ARM Mali-G610 MP4 3D GPU ensures compatibility with popular graphics standards such as OpenGL ES 1.1, 2.0 and 3.2, OpenCL up to 2.2 and Vulkan 1.2. A dedicated 2D hardware engine with MMU enhances display performance and delivers a seamless user experience.

The Rock 5B is available with 4GB, 8GB, or 16GB LPDDR4x RAM, compared to up to 8GB LPDDR4 RAM for the Raspberry Pi 4. Most importantly, the Rock 5B offers three storage solutions that you can choose from depending on your needs in terms of storage, reliability and performance. If you want the best option, you can add an eMMC module (via the onboard slot) or an M.2 NVMe SSD (via the M.2 M key slot). There is also the option to use a microSD card.

The Rock 5B doesn't have built-in WiFi, so you'll need to add a separate module, either via the USB port or the M.2 E slot. The Rock Pi creates a Wireless Module, which can be purchased for about \$10.

Ports on Radxa Rock 5B



The Radxa Rock 5B measures 100 x 72mm, larger than the Raspberry Pi 4 (85.6 x 56.5mm). On the surface, it looks like it's 30% bigger than the Pi 4.

With the increase in size, there is a lot of room for ports:

1. 2.5 Gigabit Ethernet with PoE support (using optional HAT)
2. 4 x USB (2 x USB 3.0, 2 x USB 2.0)
3. 2 x HDMI (not micro-HDMI like on the Pi 4)
4. M.2 E slot, M.2 M slot, eMMC . socket
5. USB-C (PD 2.0 compliant, commonly used for power)
6. 3.5 mm audio jack for audio and microphone outputs
7. 40-pin GPIO

There are also other things like a micro-HDMI input (but with poor support), a fan connector, and a real-time clock connector.

Rock 5B vs Pi 4 . Specifications Comparison

	Rock 5B	Raspberry Pi 4

Processor	RK3588 64-bit octa-core SoC with 1.8GHz quad-core Cortex-A55 and 2.4GHz quad-core Cortex-A76	Broadcom BCM2711 64-bit SoC with quad-core 1.5 GHz* Cortex-A72
RAM	SDRAM LPDDR4x 4, 8, or 16GB	SDRAM LPDDR4 1, 2, 4 or 8GB
Graphics card	GPU Mali G610MC4	GPU Broadcom VideoCore VI
Display output	2 x HDMI, up to 8K@60Hz (for one monitor)	2 x micro-HDMI, up to 4K@60Hz (for one monitor)
Network connections	2.5 Gigabit Ethernet with PoE support (using HAT). There is no WiFi.	Gigabit Ethernet with PoE support (using HAT), integrated WLAN module with Bluetooth 5.0 and WiFi 2.4/5GHz
Storage	microSD, eMMC, NVMe SSD (via M.2 slot)	microSD
Size	100 x 72mm	85 x 56mm

* Newer 2GB, 4GB, and 8GB Pi 4 models are accelerated to 1.8 GHz when running the Bullseye version of the Raspberry Pi OS.

You will need a fan on Rock 5B

Having a fan on the Raspberry Pi 4 isn't a bad idea to avoid throttling the CPU, but it can run without the fan in an insulated enclosure. This makes it a bit more comfortable in situations where you want to avoid hearing the computer fan running.

With the Radxa Rock 5B, you will need a fan for it to run smoothly. Luckily, the Radxa comes with a heatsink, but you'll need to buy some good thermal paste to stick it firmly in place.

Raspberry Pi is easier to use

A major factor that keeps people loyal to the Raspberry Pi board is how seamless it is from unboxing to use. When you buy an SBC that isn't a Raspberry Pi, it's a lot less smooth. You will need expert knowledge of Linux for everything to work smoothly.

The cost difference can be huge

Raspberry Pi boards have increased in price since the summer of 2021, so the Rock 5B 4GB's \$129 price tag doesn't seem like much of a difference. It might even be a better option in terms of specs. If you want the 8GB model, you have to pay \$149 and \$189 for the 16GB model.

Raspberry Pi Ltd has promised that 2023 will be a year where supply issues will be resolved. Theoretically, this means that the price should fall back to the official price. If that happens, the Raspberry Pi 4 will be much cheaper than the Radxa Rock 5B. In the official price comparison, the Pi 4 4GB version is \$55, while the Rock 5B 4GB is priced at \$129.

If you want another alternative, consider a mini PC instead of a Pi if you don't require GPIO pins. If the Rock 5B doesn't meet your needs, then consider other Raspberry Pi alternatives.

Memory is easily damaged on Raspberry Pi 4

One major problem people have with the Raspberry Pi 4 involves perishable microSD cards. While microSD cards are suitable for enthusiasts working on casual projects, those who need a more reliable storage solution will opt for an SSD.

There's no such option on the Pi 4 (unless you're using a USB 3.0 adapter), but the Rock 5B has slots on board for connecting an eMMC or M.2 NVMe SSD. These storage options offer much higher performance, better reliability (you won't accidentally knock out a microSD card, for example) and longer read-write life.

Rock 5B is a specialized tool for knowledgeable people

Raspberry Pi boards are built around a philosophy of "just right" specs for the majority of use cases. In a sense, if you're already using the Rock 5B for something the Pi 4 is capable of, you're buying a tool that's too powerful and more expensive than it needs to be.

The reality is that the Rock 5B is a bit harder to work with. Many SBC enthusiasts prefer the Raspberry Pi because of the documentation, the community, the ability to easily set up and run anything with the Raspberry Pi OS. With Rock 5B you have some material on the Wiki, but the information is harder to find and when you get stuck it's also hard to find a community where you can discuss your issues.

Should I choose Rock 5B or Raspberry Pi 4?

The Rock 5B is the option for those who need something the Raspberry Pi 4 can't provide. For example, if you need better reliability in terms of storage, with the Rock 5B you can use an SSD through the onboard M.2 slot. The only Raspberry Pi model that comes with comparable connections is the Compute Module 4, which is designed for industrial use.

Once the supply shortage is over, the Raspberry Pi 4 will be a significantly cheaper board that's easier for most enthusiasts to set up and operate than the Rock 5B, thanks to detailed documentation. and a large global user community.

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