radxa

Radxa NX5

A high performance embedded system-on-module

Revision 1.1

2023-10-08

Radxa Computer

Contents

1 Revision Control Table

Version	Date	Changes from previous version
1.0	2022-07-06	First version
1.1	2023-10-08	Updated Info

2 Introduction

The Radxa NX5 is an advanced System on Module (SoM) built around the Rockchip RK3588S System on Chip (SoC). Designed for optimal efficiency, the Radxa NX5 integrates the Central Processing Unit (CPU), Graphics Processing Unit (GPU), Neural Processing Unit (NPU), Power Management Unit (PMU), DRAM memory, and eMMC storage or SPI Nor Flash, all within a compact SODIMM form factor measuring just 70mm x 45mm.

With a range of configurations available for LPDDR4X RAM and eMMC storage, customers can select the most suitable options based on their specific requirements, as outlined in the Order Info section.

The Radxa NX5 offers a cost-effective and readily deployable solution for a wide variety of applications. Its powerful SoM, complemented by the compact form factor, significantly expedites product development, enabling customers to swiftly transition from prototyping to production with the simple development of a carrier board.
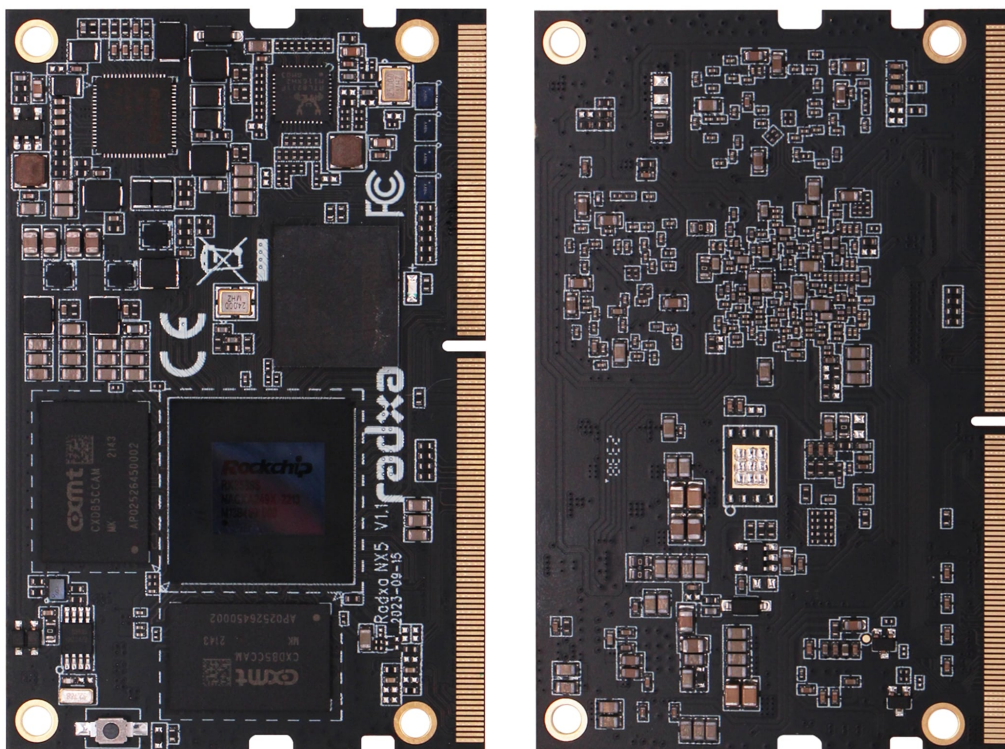
Note:

The image above displays a specific model of Radxa NX5. This particular variant comes with distinctive

features, such as eMMC storage instead of SPI Flash. Please be aware that the populated components may vary depending on the SKU (Stock Keeping Unit) purchased.

3 Specification

Features	Description
Form factor:	70 mm × 45 mm
SoC:	Rockchip RK3588S
CPU:	Quad Cortex®-A76 @ 2.2~2.4GHz and a quad Cortex®-A55 @ 1.8GHz based on Arm® DynamIQ™ configuration
GPU:	Arm Mali™ G610MP4 GPU - OpenGL® ES1.1, ES2.0, and ES3.2 - OpenCL® 1.1, 1.2 and 2.2 - Vulkan® 1.1 and 1.2 - Embedded high performance 2D image acceleration module
NPU:	NPU supporting INT4 / INT8 / INT16 / FP16 / BF16 and TF32 acceleration and computing power is up to 6TOPs
Memory:	1GB, 2GB, 4GB, 8GB or 16GB LPDDR4X (depending on SKU)
Storage:	• Optional 4GB / 8GB / 16GB / 32GB, up to 512GB Onboard eMMC Compatible with eMMC 5.1 • Supports SDMMC interface for data storage and OS booting using SD cards
Multimedia:	• VP9 / H.265 / AVS2 decode 8K@60fps • H.264 / H.265 encode 8K@30fps
Ethernet:	• 1 x Onboard Gigabit Ethernet PHY
Display:	• 1x HDMI TX up to 8K@60hz • 1x eDP TX up to 4K@60Hz • 1x DP TX (and USB3.0 Combo) up to 8K@30Hz • 1x 2-lane MIPI D/C-PHY TX
Camera:	• 2x 2-lane or 1 x 4-lane MIPI CSI for Camera • 1x 2-lane MIPI D/C-PHY RX • 1x 4-lane MIPI D/C-PHY RX
Audio:	• Up to 2x I2S • Up to 2x PDM • Up to 2x SPDIF TX

Connectivity:	· 2 × USB 2.0 Host Port (HighSpeed)
	· 1 x USB 3.0 Host Port (SuperSpeed)
	· 1 x USB 3.0 OTG Port
	· 2 x PCIe2.0 1-lane, one shared with USB3 and SATA, one shared with SATA
	· 2 x SATA ports, one shared with USB3 and PCIe2.0, one shared with PCIe2.0
	· Up to 10x UART
	· Up to 5x SPI
	· Up to 3x CAN
	· Up to 7x I2C
	· Up to 15x PWM
Power Input:	5V DC, Max 5.2V
Connector	· Connector Type: SODIMM Golden Finger Edge Connector
	· Number of Pins: 260

3.1 Software

· Debian/Ubuntu Linux support
· Android 11/12 support

Please check Radxa Download for third party images support.

4 Pinout

The Pinout document for Radxa NX5 offers a detailed explanation of pin assignments and connectivity. You are welcome to visit Radxa NX5 Pinout to access this valuable resource. Download it for comprehensive information.
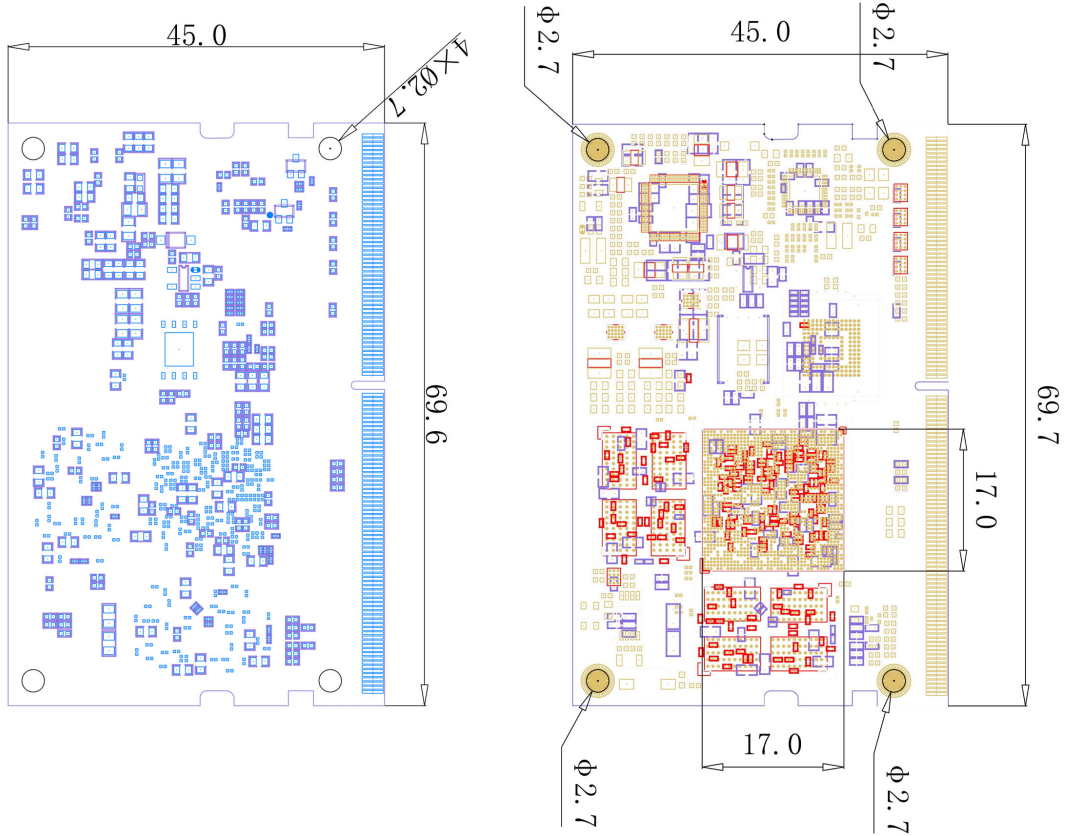
5 Dimension

Figure 1: *Radxa NX5 Dimension*

6 Model and SKU

RAM	Onboard eMMC	SKU
1G	N/A	RM121-D1E0
	8G	RM121-D1E8
2G	N/A	RM121-D2E0
	8G	RM121-D2E8
	16G	RM121-D2E16
4G	N/A	RM121-D4E0
	8G	RM121-D4E2
	16G	RM121-D4E16
	32G	RM121-D4E32
8G	N/A	RM121-D8E0
	8G	RM121-D8E8
	16G	RM121-D8E16
	32G	RM121-D8E32

7 Availability

Radxa guarantees availability Radxa NX5 until at least September 2033.

8 Support

For support please see the hardware documentation section of the Radxa Website website and post questions to the Radxa forum.