seeed studio

INDUSTRIAL PRODUCT DATASHEET

Seeed Studio XIAO ESP32-C5

First Seeed Studio XIAO with 5 GHz Wi-Fi, featuring dual-band Wi-Fi 6, BLE 5, 802.15.4, and ultra-low-power RISC-V core for secure IoT edge devices.

SKU	UPDATED	PRICE
100010048	2026-05-18 06:26:32	$6.90(Excl. VAT)

Overview

The Seeed Studio XIAO ESP32-C5 features a 32-bit RISC-V processor up to 240 MHz, with 384 KB SRAM, 8 MB Flash, 8 MB PSRAM, and deep-sleep current as low as 15 µA. It provides dual-band Wi-Fi 6 (2.4/5 GHz), Bluetooth 5 LE, and IEEE 802.15.4, supporting Matter, HomeKit, and MQTT for IoT applications like SmartSensorNode, IoTGateway, and Smart HomeAutomationDevice.

Key Features

Note:

Hey community! XIAO ESP32-C5 is available now!
Plus, we're inviting you to shape the **XIAO Open Roadmap**—help us build better products together through open collaboration!

- **First Seeed Studio XIAO with 5 GHz Wi-Fi**

Provides dual-band Wi-Fi 6 for cleaner spectrum access and higher throughput in 5 GHz, while maintaining 2.4 GHz compatibility.

- **Comprehensive connectivity**

Dual-band Wi-Fi 6, Bluetooth 5 LE, and IEEE 802.15.4 provide comprehensive IoT protocol coverage, with full support for Matter, HomeKit, and MQTT.

- **High-performance core**

Equipped with a 32-bit RISC-V single-core processor running up to 240 MHz, the XIAO ESP32-C5 integrates 384 KB on-chip SRAM, 320 KB ROM, 8MB Flash, and 8MB PSRAM. This combination ensures smooth protocol handling, multitasking, and application scalability.

- **Enhanced security**

Secure boot, flash encryption, and hardware cryptographic accelerators to protect firmware and data integrity.

- **Built-in Battery Interface for Low-Power Designs**

Integrated battery management supporting ultra-low-power operation, with deep-sleep current as low as 15 µA.

Unlock the Full Potential of XIAO with Add-ons

The XIAO series is powerful on its own, but it becomes unstoppable when paired with our diverse lineup of Add-on boards. Designed to bridge the gap between a raw microcontroller and a finished project, these add-ons cater to every need: from **XIAO Expansion Board**—which adds an OLED screen, RTC, and battery management—to specialized functional modules like **Wi-Fi HaLow** and **LoRa (SX1262)** for long-range connectivity, **LED Driver Board**/**COB LED Driver Board** for lighting applications, or **ePaper Driver Boards** compatible with **various display sizes** for ultra-low power visual interfaces. **Dive into our extensive modules** to discover even more ways to expand your XIAO.

We already have over 15 XIAO products based on different solutions in the XIAO family, to help you better understand the differences and choose the most suitable part for your projects, please refer to the **Seeed Studio XIAO Series Page**.

Starter Kit with free Course for all Electronics Neophytes and Enthusiasts

Seeed Studio has provided the **Grove Starter Kit** along with **free and detailed courses** for you quickly get started with microcontrollers and electronics, regarding all the Seeed Studio XIAO boards, promising you a great learning experience.

Not only programming but also electronics knowledge is not required, you will be taken step by step, from **understanding the basic concepts to exercising the simple projects individually**, finally being able to **build complex, interesting, wearable projects** on your own, owing a **practical electronic product prototype** from the course.

Ready to elevate your project building experience? The **XIAO Debug Mate** is an essential all-in-one tool. It acts as a complete command center for your projects, combining SWD debugging, serial monitoring, and micro-amp (μA) power measurement into a single device—empowering you to debug code and optimize energy efficiency for battery-powered projects simultaneously.

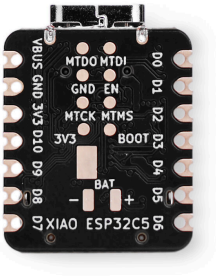
Production-Ready Design with Fusion PCBA Support

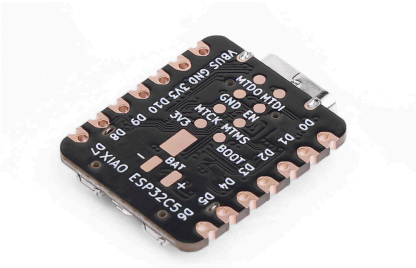
All Seeed Studio XIAO dev boards feature a production-optimized SMD (Surface Mount Device) design with standardized stamp holes, making it perfect for commercial PCBA (Printed Circuit Board Assembly) integration. Through our **Fusion PCBA Sponsorship program**, you can not only enjoy the lowest unit prices for all XIAO modules from our Fusion Open Parts Library, but also fabricate and scale your XIAO-based PCBA designs at low cost (30% off) with FREE Design for Manufacturing consulting services, streamlining your journey from prototype to production.

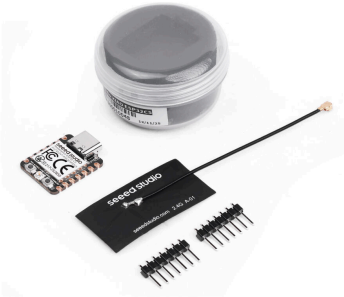
Note

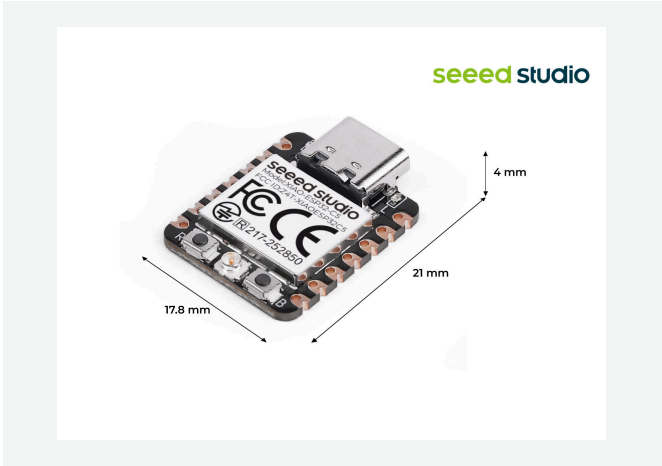
XIAO SoM User Manual open-sources all hardware and software materials of XIAO, providing professional product design guidelines to help you accelerate ideas off the ground, streamline product design, providing a seamless experience from module selection to mass production. You can check **here** to see more info.

Product Gallery





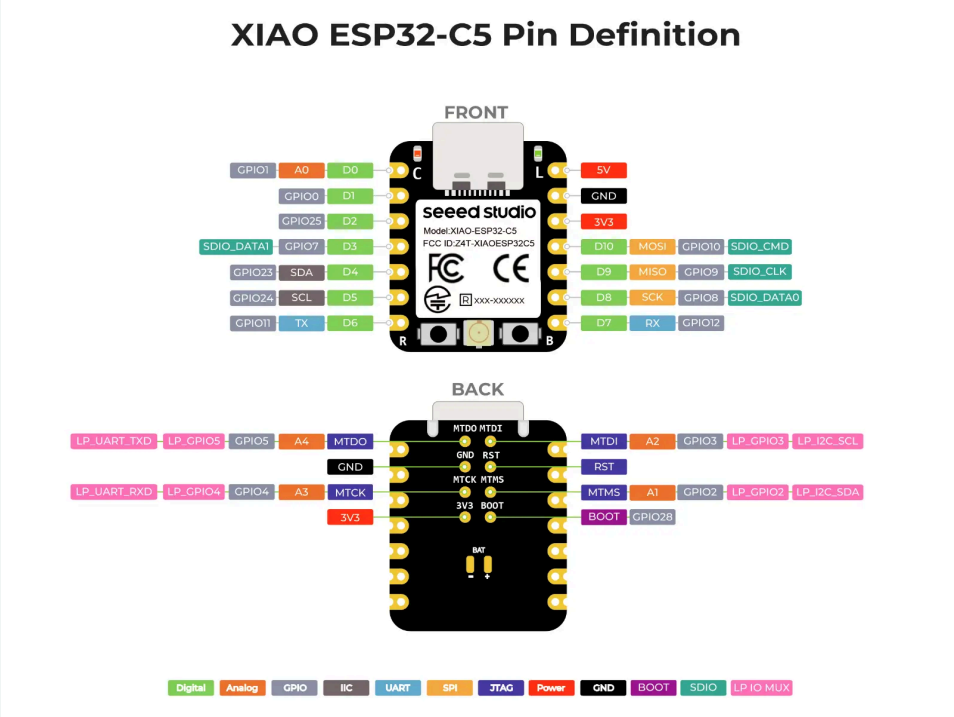




Specification

Product	XIAO ESP32-C5
Chipest	ESP32-C5HR8
Processor	High-performance 32-bit RISC-V single-core microprocessor, up to 240MHz and a low-power 32-bit RISC-V core at up to 48MHz (according to Datasheet, up to 20MHz p.69 of Technical Reference Manual v0.2)
SRAM	384KB
RSRAM	8MB
Flash	8MB
Interface	11x GPIO Pin
	1x Analog Pin + 4x Analog Pad on the reverse side
	1x I2C
	1x UART
	1x SPI
	1 x JTAG (Pads on the reverse side)
On Board	1x User LED (Green)
	1x Charge LED (Battery Charging Indicator)
	1x Reset Button
	1x Boot Button
	1x UFL Connector
Antenna	2.4GHz FPC (2.9dBi) (same as used on XIAO ESP32-C3) Optional: 2.4GHz Rod Antenna (2.81dBi)
Wireless Connectivity	2.4 and 5 GHz dual-band Wi-Fi 6 (802.11ax)
	Bluetooth® 5 (LE)
	Zigbee
	Thread (802.15.4)
Power Input	Type-C: 5V/DC
	Battery: 3.7V
Deep Sleep（Typ.） (Low Power Firmware)	USB Power Supply: 375 μA Battery Power (BAT): 15 μA
Working Temperature	0°C ~85°C
Dimensions	21 x 17.8mm

Hardware Overview



Applications

- SmartSensorNode
- IoTGateway
- BLETracker
- Wi-FiButton
- SecureEdgeDevice
- Smart HomeAutomationDevice
- Wireless Security Testing

Part List

XIAO ESP32-C5	x1
FPC Antenna	x1
Pin Header	x2

Compliance & Logistics

HSCODE	8543709990
USHSCODE	8517180050
UPC	
EUHSCODE	8543709099
COO	CHINA

FCC Requirement

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

15.21

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy.

If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Resource Links

- https://www.seeedstudio.com/Seeed-Studio-XIAO-ESP32C5-p-6609.html

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