seeed studio

INDUSTRIAL PRODUCT DATASHEET

Seeed Studio XIAO ESP32-S3 (Pre-Soldered)

Seeed Studio XIAO ESP32-S3 (Pre-Soldered): a compact ESP32-S3 MCU board with WiFi, BLE 5.0, deep sleep down to 14μA, and lithium battery charge management for IoT, wearable, and low-power rapid prototyping.

SKU	UPDATED	PRICE
102010634	2026-09-20 06:19:54	$8.49(Excl. VAT)



Overview



The Seeed Studio XIAO ESP32-S3 (Pre-Soldered) is a thumb-sized 21 x 17.8mm MCU board built around the ESP32-S3 32-bit, dual-core Xtensa processor running at up to 240MHz, with 2.4GHz WiFi, BLE 5.0, and U.FL antenna support. It provides lithium battery charge management, four power consumption models with deep sleep as low as 14μA, Arduino/MicroPython support, and a breadboard-friendly & SMD design for applications including Internet of Things, wearable devices, smart homes, robotics, health monitoring, education, low-power networking, and rapid prototyping.

Key Features

- **Powerful MCU Board:** Incorporate the ESP32-S3 32-bit, dual-core, Xtensa processor running at up to 240MHz, mounted multiple development ports, Arduino / MicroPython supported
- **Outstanding RF performance:** Supports 2.4GHz WiFi and BLE 5.0 dual wireless communication, support 100m+ remote communication when connected with U.FL antenna
- **Elaborate Power Design:** Lithium battery charge management capability, offer 4 power consumption model which allows for deep sleep mode with power consumption as low as 14μA
- **Thumb-sized Compact Design:** 21 x 17.8mm, adopting the classic form factor of XIAO, suitable for space limited projects like wearable devices
- **Perfect for Production:** Breadboard-friendly & SMD design, no components on the back

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.

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.

You can have access to the **Seeed Studio Grove ecosystem** by connecting it to the compatible **Seeed Studio XIAO expansion board**. We have developed more than **400 Grove modules**, covering a wide range of applications that can fulfill various needs. Get started and explore the infinite possibilities of the Seeed Studio XIAO series!

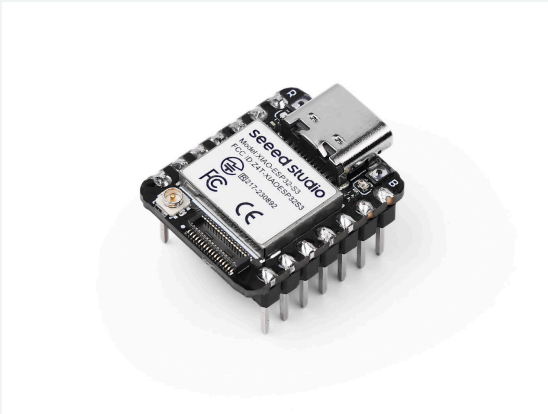
If you are interested in programming embedded machine learning, we have **Codecraft** visual programming that can help you quickly start your own TinyML project. And we have set up a **#tinyml** channel on our Discord server, please click to join for 24/7 making, sharing, discussing, and helping each other out.

We already have 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**.

With our Seeed Studio Fusion services, you can access competitive **one-stop PCBA manufacturing, component sourcing, and testing, plus free DFA/DFM review** to reduce manufacturing risks and accelerate the journey from prototype to production.

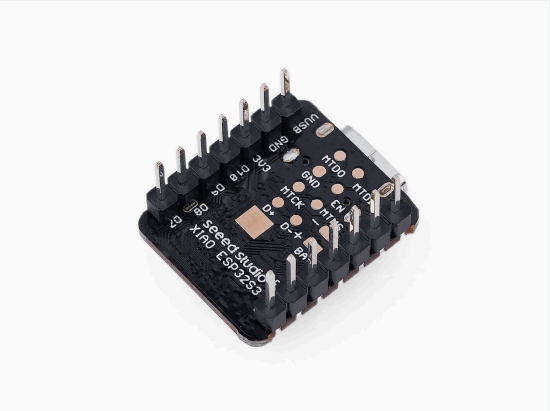
Product Gallery



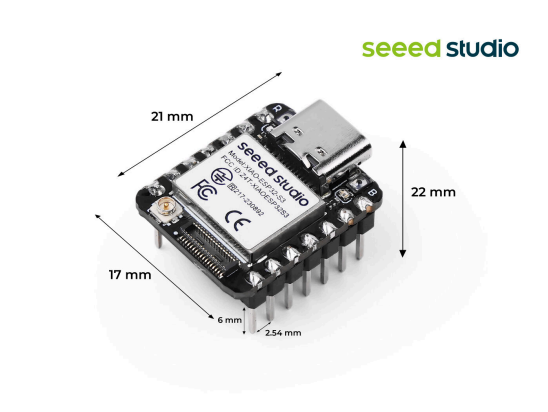








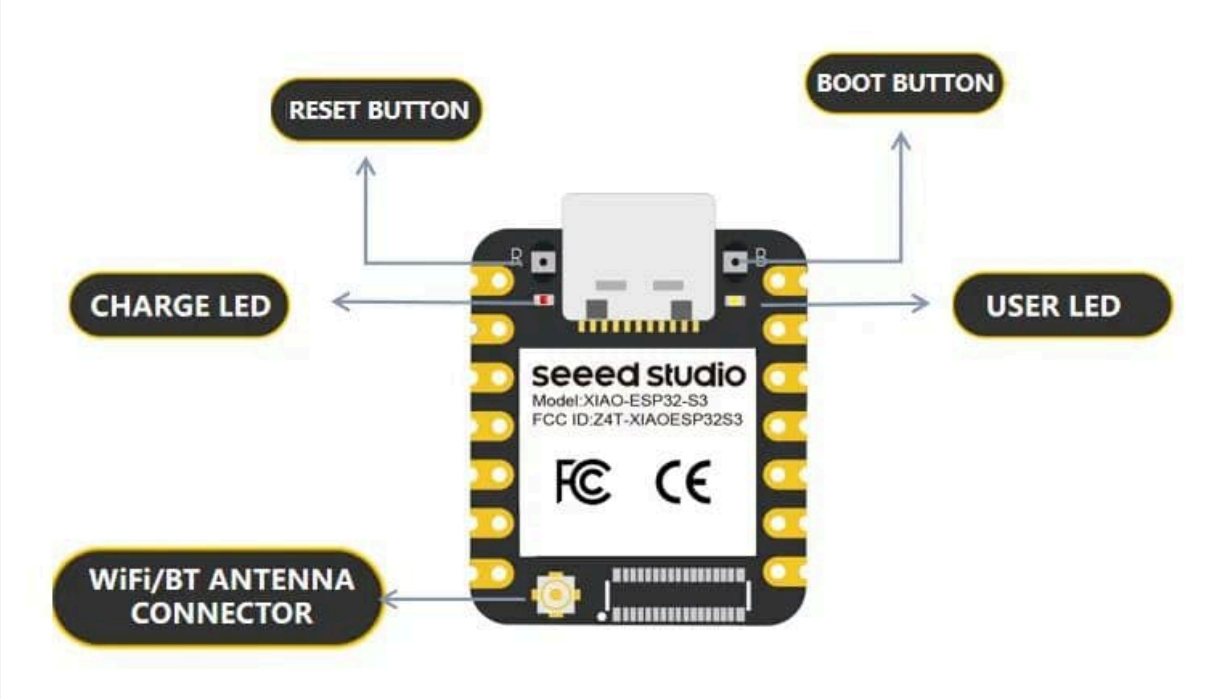


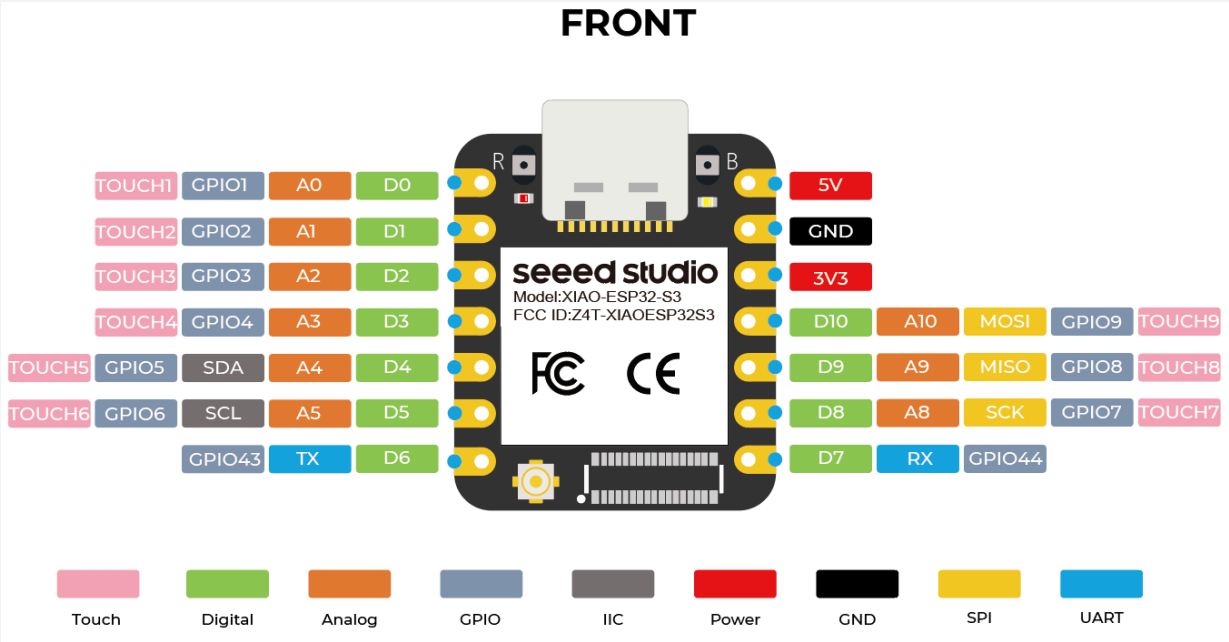


Specification

Parameter	Seeed Studio XIAO ESP32-S3(Pre-Soldered)	Seeed Studio XIAO ESP32-C3(Pre-Soldered)
Processor	ESP32-S3R8 SoC	ESP32-C3 SoC
	Xtensa LX7 dual-core, 32-bit processor running up to 240 MHz	RISC-V single-core 32-bit chip processor with a four-stage pipeline that operates at up to 160 MHz
Wireless	Complete 2.4GHz WiFi subsystem	
	Bluetooth Low Energy 5.0 / Bluetooth Mesh	
On-chip Memory	8MB PSRAM & 8MB Flash	400KB SRAM & 4MB Flash
Interface	1x UART 1x IIC 1x SPI 11x GPIO(PWM) 9x ADC 1x User LED 1x Charge LED	1x UART 1x IIC 1x SPI 11x GPIO(PWM) 4x ADC 1x Charge LED
	1x Reset button 1x Boot button	
Dimensions	21 x 17.8mm	
Power（Typ.）	Input voltage (Type-C): 5V Input voltage (BAT): 3.7V	Input voltage (Type-C): 5V Input voltage (BAT): 3.7V
	Circuit operating Voltage: - Type-C: 5V@19mA - BAT: 3.8V@22mA	Circuit operating Voltage: - USB:5V@9mA - BAT:3.8V@9mA
	Charging current: 50mA(Fast) / 3.8mA(Trickle)	Charging current: 380mA(Fast) / 40mA(Trickle)
Low Power Consumption Mode（Typ.) (Supply Power: 3.8V)	Modem-sleep Mode: 27 mA Light-sleep Mode: 2mA Deep Sleep Mode: 14 μA	Modem-sleep Mode: 24 mA Light-sleep Mode: 3 mA Deep Sleep Mode: 44 μA
WiFi Enabled Power Consumption（Typ.)	Active Mode: 220 mA	Active Mode: 103 mA
BLE Enabled Power Consumption（Typ.)	Activex Mode: 217 mA	/
Working Temperature	-40°C ~ 65°C	-40°C ~ 85°C

Hardware Overview





Applications

- **Internet of Things**
- **Wearable devices**
- **Smart Homes**
- **Robotics**
- **Health monitoring**
- **Education**
- **Low-Power(LP) networking**
- **Rapid prototyping**

Part List

Seeed Studio XIAO ESP32S3 (Pre-Soldered)	x1
Antenna	x1

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-ESP32S3-Pre-Soldered-p-6334.html
- TinyML Case Studies
- 3D Printing "Case" Studies
- PCN-XIAO Series Packaging Upgrade.pdf
- Wiki-XIAO ESP32-S3 Series Resources
- Seeed Studio XIAO Use Case

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