

seeed studio

INDUSTRIAL PRODUCT DATASHEET

Seeed Studio XIAO nRF52840 Sense (XIAO BLE Sense)

Seeed Studio XIAO nRF52840 Sense (XIAO BLE Sense) — a thumb-sized BLE 5.4/NFC board with digital microphone and 6-axis IMU for embedded ML, wearable, and IoT applications.

SKU

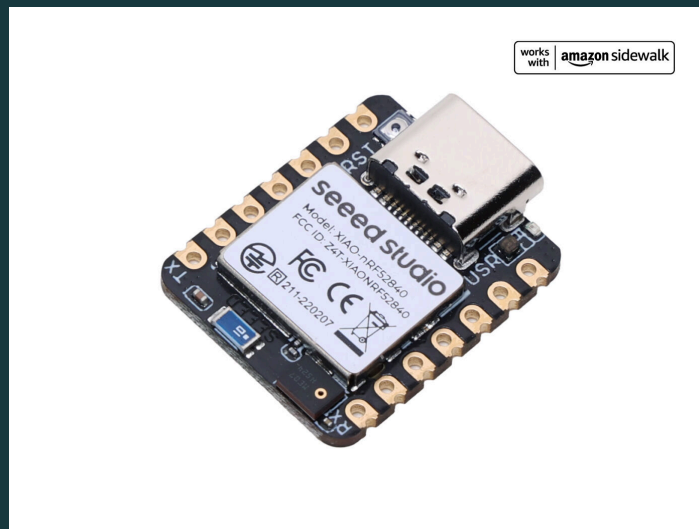
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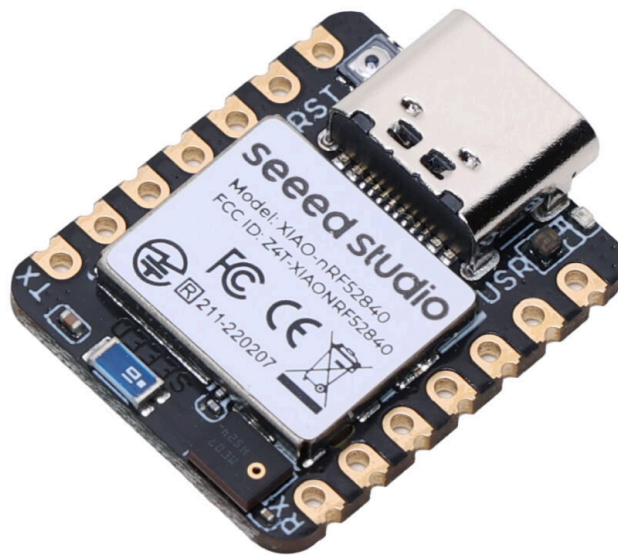
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PRICE

\$15.90(Excl. VAT)



Overview



The Seeed Studio XIAO nRF52840 Sense (XIAO BLE Sense) is a thumb-sized (21 x 17.8mm) microcontroller board built on the Nordic nRF52840 chip, featuring Bluetooth Low Energy 5.4, NFC, ultra-low 5 μ A deep sleep power consumption, a digital microphone, and a 6-axis IMU for embedded machine learning applications. It offers a production-ready SMD design with standardized stamp holes and Fusion PCBA support, and is supported by Arduino/CircuitPython for wearable, IoT, and TinyML projects.

Key Features

- **Versatile Microcontroller:** Incorporate the **Nordic nRF52840** chip with FPU, operating up to 64 MHz, mounted multiple development ports, supported by Arduino / CircuitPython
- **Wireless Capabilities:** Implement Bluetooth Low Energy 5.4, BLE functions with onboard antenna, also provide NFC connectivity
- **Elaborate Power Design:** Provide **ultra-low power consumption** as 5 μ A in deep sleep mode while supporting lithium **battery charge management**
- **Advanced onboard Functionality:** Assemble additional **digital microphone** and **6-axis IMU** in the tiny board for embedded Machine Learning applications
- **Thumb-sized Design:** 21 x 17.8mm, Seeed Studio XIAO series classic form-factor, suitable for wearable devices

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.

Starter Kit with free Course for all Electronics Neophytes and Enthusiasts

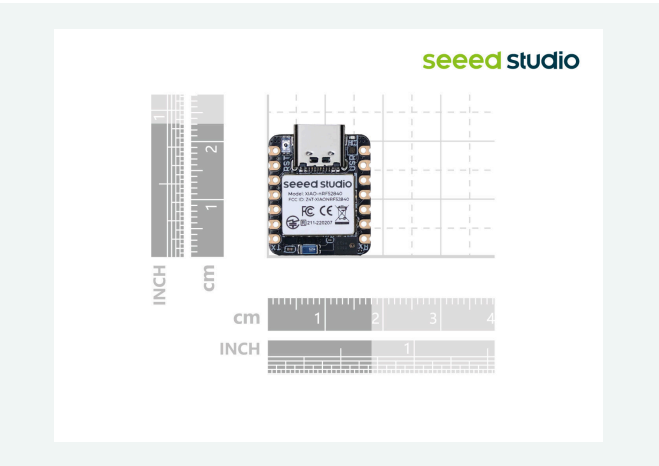
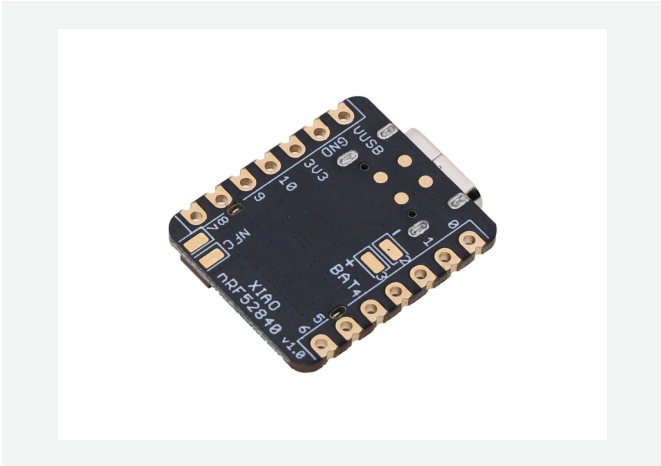
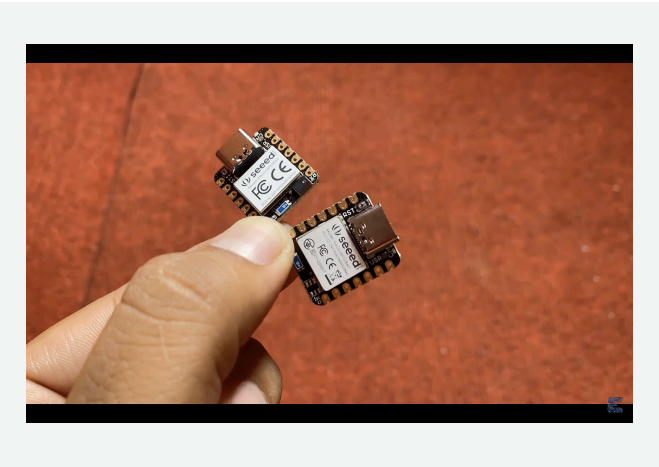
Seeed Studio has provided the **Grove Starter Kit** along with **free and detailed courses** for you quickly get started with microcontrollers and electronics, regarding all the Seeed Studio XIAO boards, promising you a great learning experience. Not only programming but also electronics knowledge is 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. For example, you can utilize the accelerometer on XIAO nRF52840 Sense combined with Edge Impulse to enable **motion recognition** by connecting with a **Grove - OLED Display 0.66" (SSD1306)- IIC - 3.3V/5V**. 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 **#tinymml** channel on our Discord server, please click to join for 24/7 making, sharing, discussing, and helping each other out.

We already have 8 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**.

Product Gallery

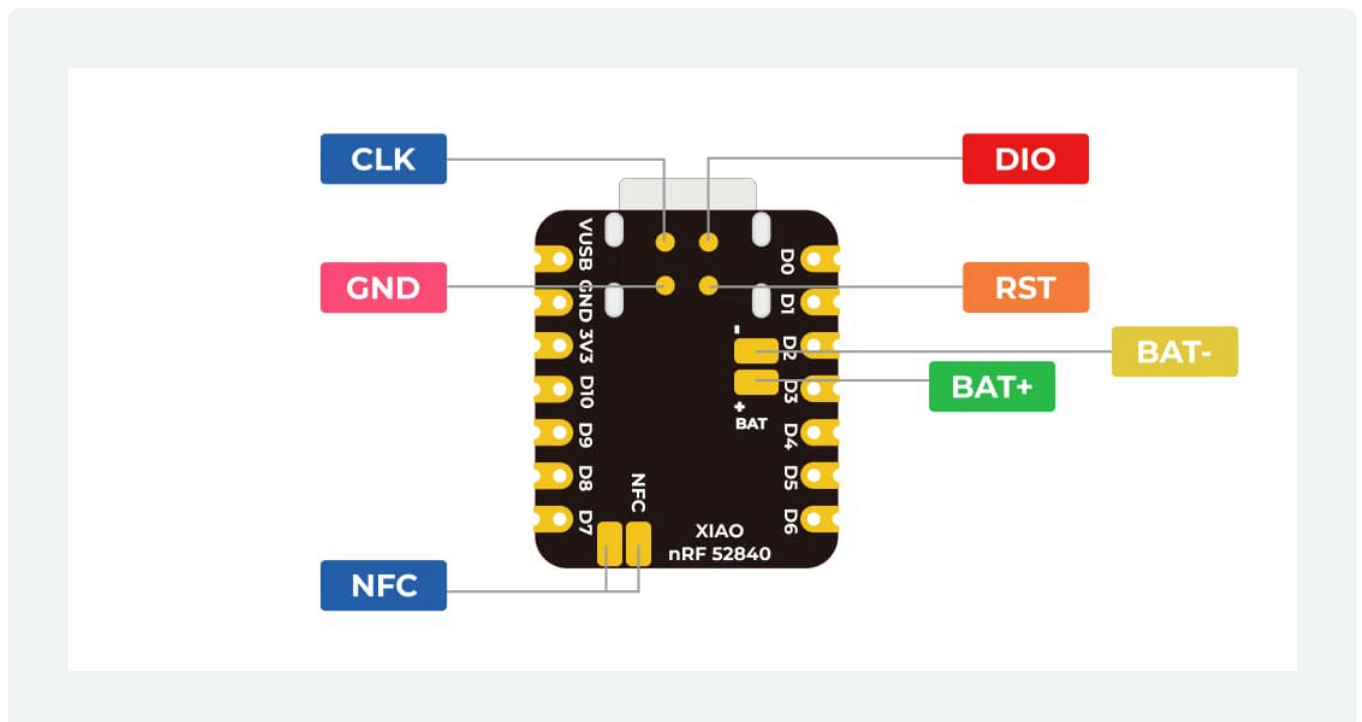
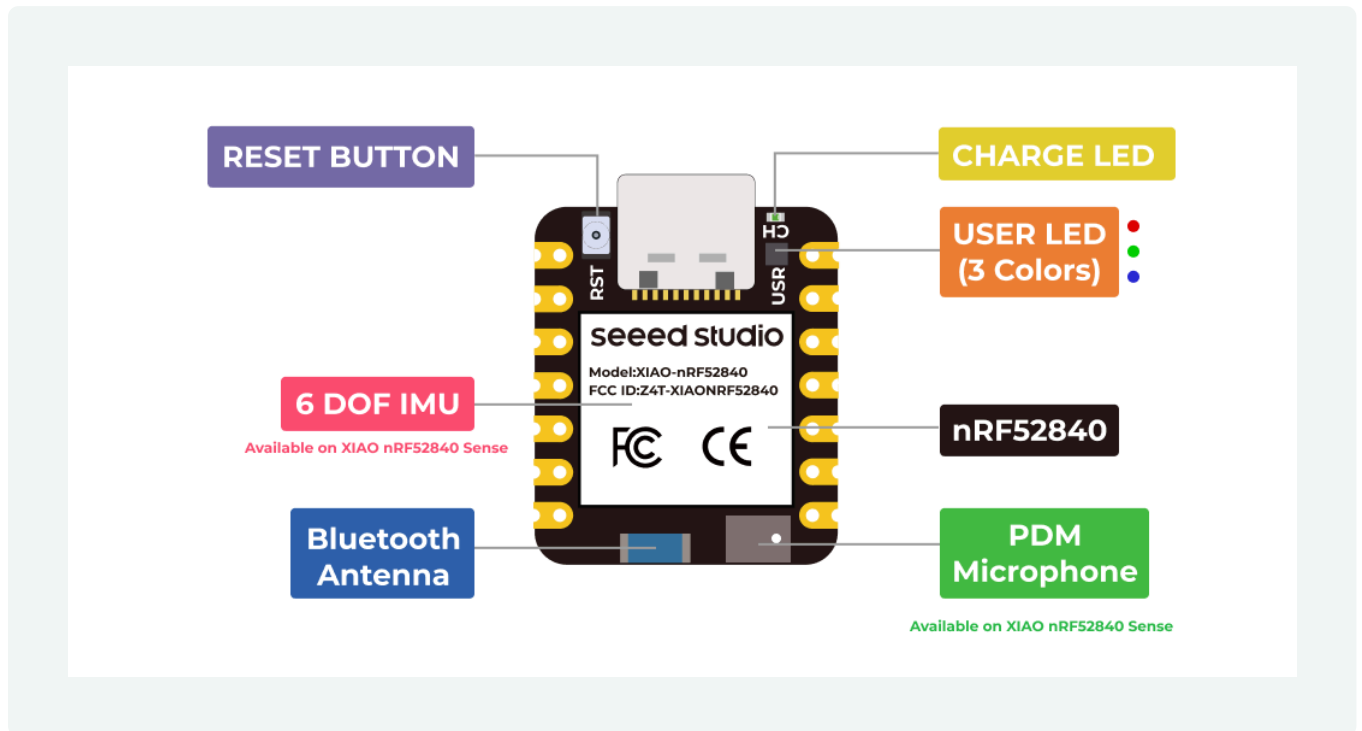


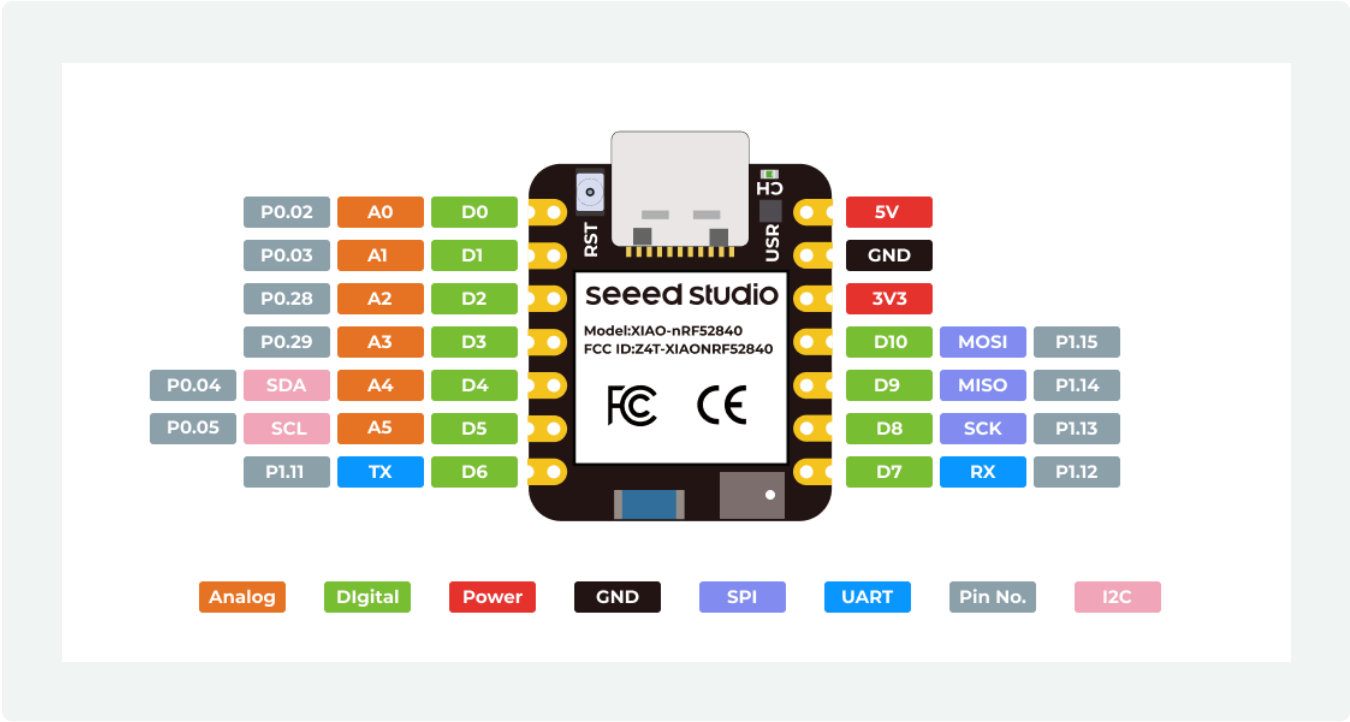
Specification

Item	Seeed Studio XIAO nRF52840 (Pre-Soldered)	Seeed Studio XIAO nRF52840 Sense (Pre-Soldered)
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Processor	Nordic nRF52840	
	ARM® Cortex®-M4 with FPU runs up to 64 MHz	
Wireless	Bluetooth Low Energy 5.4/Bluetooth Mesh/NFC	
On-chip Memory	1 MB flash and 256 kB RAM	
Onboard Memory	2 MB QSPI flash	
Interface	1xUART 1xIIC 1xSPI 1xNFC 1xSWD	
	11xGPIO(PWM) 6xADC	
Sensors	/	1xOnboard PDM digital microphone
		1xOnboard 6-axis IMU
Dimensions	21 x 17.8mm	
Power(Typ.)	Circuit operating voltage: 3.3V@200mA	
	Charging current: 50mA(Fast) / 100mA(Trickle)	
	Input voltage (VIN): 5V Input voltage (BAT): 3.7V	
	Standby power consumption: <5μA	

Hardware Overview





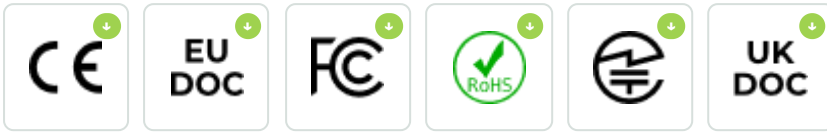
Applications

- Small and flexible wearable device
- Wifi/Bluetooth controlled wireless connection project
- Embedded Machine Learning Project
- IoT and TinyML AI applications
- Great for mini Arduino projects

Part List

Seeed Studio XIAO nRF52840 Sense - nRF52840	x1
7 Pin Header	x2

Compliance & Logistics



HSCODE	8517180050
USHSCODE	8517180050
UPC	841454123507
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-XIAO-BLE-Sense-nRF52840-p-5253.html>
- [BQ25101 Datasheet](#)
- [ST LSM6DS3TR Datasheet](#)
- [mic-MSM261D3526H1CPM](#)
- [Nano BLE MCU-nRF52840 PS v1.1](#)
- [Bottom-pad-positioning](#)
- [Flash_P25Q16H-UXH-IR_Datasheet](#)
- [Seeed Studio XIAO nRF52840 BLE Communication Distance Test Report](#)
- [Seeed Studio XIAO nRF52840 CE | FCC | MIC](#)
- [TinyML Case Studies](#)
- [XIAO Reference Design](#)
- [3D Printing "Case" Studies](#)
- [PCN-XIAO Series Packaging Upgrade.pdf](#)

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