

INDUSTRIAL PRODUCT DATASHEET

Seeed Studio XIAO nRF54LM20A

The Seeed Studio XIAO nRF54LM20A Sense is an ultra-low-power wireless board optimized for battery-powered IoT, wearables, and edge AI with multiprotocol connectivity, onboard sensors, and efficient power management.

SKU	UPDATED	PRICE
100023651	2026-07-21 10:26:46	\$9.90(Excl. VAT)



Overview



The Seeed Studio XIAO nRF54LM20A Sense is an ultra-low-power wireless board featuring Nordic's nRF54LM20A SoC with a 128 MHz Arm Cortex-M33, RISC-V coprocessor, multiprotocol 2.4 GHz connectivity, 8MB flash, IPEX antenna, nPM1300 PMIC, and onboard motion/audio sensors. It achieves deep sleep current of 4.76 μA and active wireless average current of 3.87 mA at +8 dBm TX, making it ideal for battery-powered wearables, IoT sensor nodes, smart home devices, TinyML, and voice-triggered applications.

Key Features

Powerful SoC with Advanced Connectivity & Security

Seeed Studio XIAO nRF54LM20A Sense is a compact, ultra-low-power wireless development board powered by Nordic Semiconductor's nRF54LM20A SoC. It features a 128 MHz Arm Cortex-M33 processor, 512 KB RAM, 2 MB on-chip NVM, a 128 MHz RISC-V coprocessor, multiprotocol 2.4 GHz wireless connectivity, 8MB external flash, IPEX antenna connector, and Nordic nPM1300 PMIC for efficient power management.

With support for Bluetooth LE, Bluetooth Channel Sounding, Bluetooth Mesh, Thread, Zigbee, Matter, and proprietary 2.4 GHz protocols up to 4 Mbps, this board is built for next-generation connected products. The onboard motion and audio sensors make it ideal for wearables, smart sensing, TinyML, gesture recognition, voice-triggered devices, and battery-powered IoT applications.

Comprehensive security features include secure boot, secure firmware updates, secure storage, TrustZone-enabled trusted execution environment, cryptographic acceleration with side-channel protection, and tamper detection, ensuring robust protection for IoT deployments.

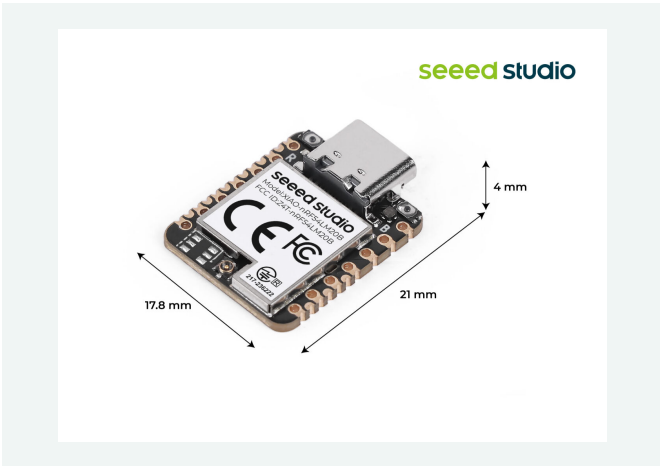
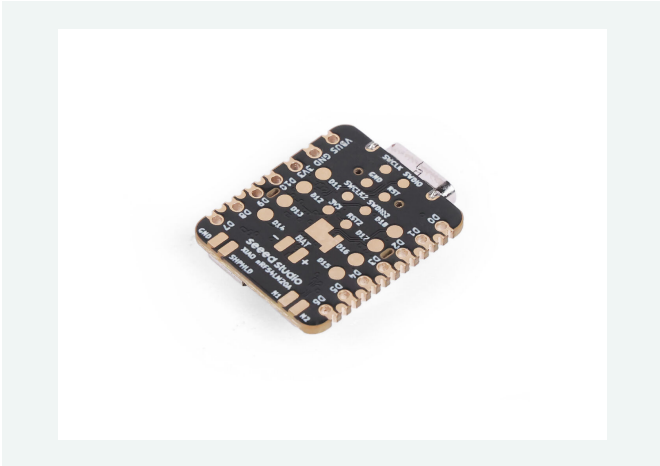
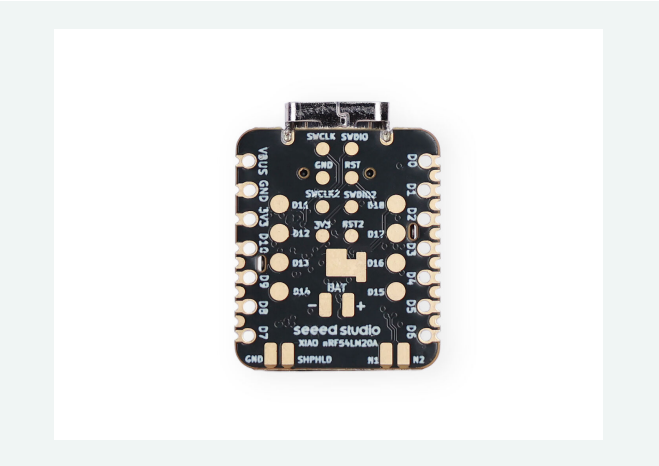
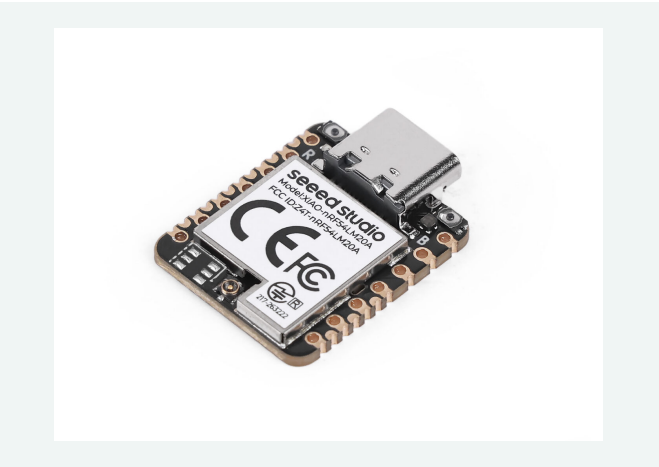
Ultra-Low Power Efficiency

Built on Nordic nRF54LM20A and nPM1300 PMIC, XIAO nRF54LM20A Sense achieves a measured deep sleep current of only 4.76 μ A under BAT power. Combined with the nPM1300 PMIC and its 0.33 μ A Ship Mode BAT current, in active wireless operation, it records an average current of 3.87 mA with a 3.7 V simulated battery input and TX power set to +8 dBm, the board is ideal for long-life battery-powered sensing applications, wearables, and always-on IoT devices.

Streamlined Development Experience

Full support for Nordic nRF Connect SDK and PlatformIO (Zephyr) enables efficient embedded development workflows. Arduino IDE is supported via nrf54-arduino-core.

Product Gallery



Specification

Product Name	Seeed Studio XIAO nRF54LM20A	Seeed Studio XIAO nRF54LM20A Sense
Chipset	nRF54LM20A nRF54LM20B Datasheet	

Processor	Arm® Cortex®-M33 128 MHz	
	RISC-V 128 MHz Coprocessor	
RAM	512KB	
Flash	2 MB Non-volatile Memory (NVM)	
External Flash	8 MB onboard external flash	
PMIC / Battery	nPM1300 PMIC for power regulation and battery charging	
Interface	28x GPIO Pin	
	9x Analog Pin	
	1x I2C	
	1x UART	
	1x SPI	
	1x NFC	
Onboard	1 x SHPHLD	
	1x User LED (R\G\B 3 Color)	
	1x Charge LED (Battery Charging Indicator)	
	1x Reset Button	
	1x User Button	
	1x IPEX4 Connector (for external antenna)	
	/	1x 6-Axis IMU 1x PDM Microphone
Wireless Connectivity	Bluetooth LE 6.0 (include Channel Sounding)	
	Bluetooth Mesh	
	NFC	
	Thread	
	Zigbee	
	Matter	
	Amazon Sidewalk	
	Proprietary 2.4 GHz protocols	
Power Input	Type-C: 5V	
	Battery: 3.7V	
Low Power Mode(3.7V@2A)	/	Light-Sleep: ~9.96μA Deep-Sleep(System OFF): ~4.76μA Deep-Sleep(System OFF、GRTC wake-up): ~4.92μA Ship-Mode: 0.33μA
Software Compatibility	Nordic nRF Connect SDK	
	PlatformIO	
	Zephyr RTOS	
Working Temperature	-20°C to 70°C	
Dimensions	21 x 17.8mm	
Various Versions	XIAO nRF54LM20A Pre-soldered	XIAO nRF54LM20A Sense Pre-soldered

Applications

- Wearable motion and activity tracking
- Battery-powered Bluetooth LE sensor nodes
- Smart home devices with Matter, Thread, Zigbee, or Bluetooth Mesh
- TinyML and edge AI sensing
- Audio event detection and voice-triggered devices

Compliance & Logistics

HSCODE	8543709990
USHSCODE	8517180050
UPC	
EUHSCODE	8543709099
COO	CHINA

Resource Links

- <https://www.seeedstudio.com/Seeed-Studio-XIAO-nRF54LM20A-p-6841.html>

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