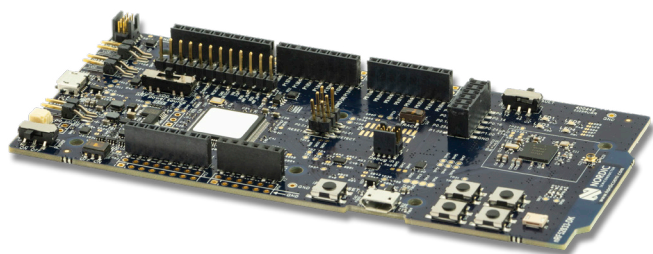# nRF52833 DK

Development kit for Bluetooth 5.1/Bluetooth mesh/Thread/Zigbee/802.15.4/2.4 GHz applications on the nRF52833 SoC

Product Overview

The nRF52833 DK is an affordable single-board development kit for *Bluetooth*® 5.1, Bluetooth mesh, Thread, Zigbee, 802.15.4 and 2.4 GHz proprietary applications using the nRF52833 multi-protocol SoC.

The kit is compatible with the Arduino Uno Rev3 standard making it possible to use a wide range of 3rd-party shields during development, including the compatible Power Profiler Kit from Nordic Semiconductor.

The kit has access to all I/Os (42) and interfaces via connectors and there is an integrated PCB trace antenna and an RF connector for direct RF test measurements. There is also a connector for an external NFC antenna (included in kit).

Get started

Development on the nRF52833 DK is supported by the nRF5 Software Development Kit (SDK), providing all necessary examples, libraries and drivers to get started with Bluetooth Low Energy development. The nRF52833 has Bluetooth 5.1 protocol stack support using either the S113 or S140 SoftDevices from Nordic Semiconductor. S140 is a Bluetooth 5.1 qualified protocol stack and includes support for high throughput with 2 Mbps transfer, Bluetooth Long Range, Advertising Extensions, and improved coexistence with Channel Selection Algorithm #2. The nRF5 SDK for Thread and Zigbee, and the nRF5 SDK for Mesh have planned support for the nRF52833 in Q4, 2019.

Everything needed to start development can be downloaded from www.nordicsemi.com/Software-and-Tools/Development-Kits/nRF52833-DK

KEY FEATURES

- Bluetooth 5.1 multiprotocol radio
  - 2 Mbps
  - Long Range
  - Advertising Extensions
  - Channel Selection Algorithm #2 (CSA #2)
  - Bluetooth mesh
  - Direction Finding
- IEEE 802.15.4 radio support
  - Thread
  - Zigbee
- Arm® Cortex™-M4 with FPU
- Arduino Rev3 compatible connector for use with 3rd party shields
- All I/Os and interfaces available via connectors
- Segger J-Link OB programming/debugging supported
- Support for programming/debugging of external boards
- USB interface direct to nRF52833 SoC
- USB interface to power and program/debug
- Integrated 2.4 GHz PCB antenna
- Connector for external NFC antenna (included)
- SWF connector for direct RF measurements
- Pins for power consumption measurements
- 4 × user-programmable buttons
- 4 × user-programmable LEDs
- CR2032 coin-cell battery holder
- 1.7-5.5 V supplied from battery, USB or external VDD

APPLICATIONS

- Professional lighting
- Asset tracking
- Wayfinding
- Multiprotocol devices
- Mesh networks
- Advanced wearables
- Smart home
- HID/Gaming/VR
- Toys
- Sports and fitness

The nRF52833 SoC

The ultra-low power nRF52833 is a multiprotocol SoC with a Bluetooth 5.1 Direction Finding capable radio, qualified for operation at an extended temperature range of -40°C to 105°C. It supports Bluetooth 5.1, Bluetooth mesh, 802.15.4, Thread, Zigbee, and proprietary 2.4 GHz protocols.

The nRF52833 is the 5th addition to the industry leading nRF52 Series SoC family and includes higher end features such as a Full-speed 12 Mbps USB 2.0, High-speed 32 MHz SPI, and +8dBm output power. It is built around a 64 MHz Arm Cortex-M4 with FPU and has 512 KB flash and 128 KB RAM memory available for higher value applications. It includes analog and digital interfaces such as NFC-A, ADC, UART/SPI/TWI, PWM, I2S and PDM, and has a 1.7 V to 5.5 V supply voltage range, which enables powering the device from rechargeable batteries or over USB. The two-stage LDO regulator and a DC-DC converter, together with the automated power management system help deliver low power numbers even in more advanced applications.

The extended temperature range up to 105°C, a generous amount of memory, and dynamic concurrent multiprotocol support ensures the nRF52833 is an ideal device for a wide range of commercial and industrial Bluetooth Low Energy, mesh and Thread applications, including professional lighting and asset tracking. A 1:4 RAM to Flash ratio and +8dBm output power make the nRF52833 suitable for advanced wearables or smart home applications where robust coverage is important.

nRF52833 DK COMPATIBLE SOFTDEVICES

S113	Memory-optimized Bluetooth 5 protocol stack for the nRF52810, nRF52811, nRF52832, nRF52833 and nRF52840 SoCs
S140	Feature complete Bluetooth 5 protocol stack for the nRF52811, nRF52833 and nRF52840 SoCs

Feature comparison	nRF52810	nRF52811	nRF52832	nRF52833	nRF52840
Bluetooth 5 2 Mbps & CSA #2	X	X	X	**X**	X
Bluetooth 5 Advertising Extensions		X	X	**X**	X
Bluetooth 5 Long Range		X		**X**	X
Bluetooth 5.1 Direction Finding		X		**X**	
Input supply range (V)	1.7-3.6	1.7-3.6	1.7-3.6	**1.7-5.5**	1.7-5.5
Max temperature (°C)	+85	+85	+85	**+105**	+85

RELATED PRODUCTS

nRF52833	SoC for Bluetooth 5.1/Bluetooth mesh/802.15.4/Thread/Zigbee/2.4 GHz
nRF52840	SoC for Bluetooth 5/Bluetooth mesh/802.15.4/Thread/Zigbee/ANT/2.4 GHz
nRF52832	SoC for Bluetooth 5/Bluetooth mesh/ANT/2.4 GHz
nRF52811	SoC for Bluetooth 5.1/802.15.4/Thread/Zigbee/ANT/2.4 GHz
nRF52810	SoC for Bluetooth 5/ANT/2.4 GHz
nRF5 SDK	Main software development kit for Bluetooth 5, ANT and 802.15.4
nRF5 SDK for Mesh	Software development kit for Bluetooth mesh
nRF5 SDK for Thread and Zigbee	Software development kit for Thread and Zigbee

ORDER INFORMATION

nRF52833-DK	Development Kit for nRF52833 SoC

WORLD WIDE OFFICE LOCATIONS

Headquarters:
Trondheim, Norway
Tel: +47 72 89 89 00

For more information
Visit **nordicsemi.com** for the complete product specification about this and any other wireless ULP products.

About Nordic Semiconductor
Nordic Semiconductor is a fabless semiconductor company specializing in ULP short-range wireless communication. Nordic is a public company listed on the Norwegian stock exchange.

TRONDHEIM, NORWAY HEAD OFFICE
OSLO, NORWAY
OULU, FINLAND
ESPOO, FINLAND
TURKU, FINLAND
PORTLAND, USA
LONDON, UNITED KINGDOM
SAN JOSE, USA
EINDHOVEN, THE NETHERLANDS
DÜSSELDORF, GERMANY
KRAKOW, POLAND
BEIJING, CHINA
SEOUL, KOREA
YOKOHAMA, JAPAN
SHANGHAI, CHINA
SHENZHEN, CHINA
TAIPEI, TAIWAN
HONG KONG, CHINA
MANILA, PHILIPPINES