

nRF52832

Versatile Bluetooth 5.3 SoC supporting Bluetooth Low Energy, Bluetooth mesh and NFC

Overview

The nRF52832 is a general-purpose multiprotocol SoC. It meets the challenges of a broad range of applications that need advanced Bluetooth[®] LE features, protocol concurrency and a rich and varied set of peripherals and features. In addition, it offers generous memory availability for both Flash and RAM. makes it the ideal choice for LE Audio, professional lighting, advanced wearables, and other complex IoT applications.

The nRF52832 is a superset of the nRF52810 and nRF52805 SoCs. In addition the nRF52832 is capable of Bluetooth mesh, NFC and has a floating point unit.

Wireless protocol support

The nRF52832 SoC supports concurrent multiprotocol. Bluetooth mesh can be run concurrently with Bluetooth LE, enabling smartphones to provision, commission, configure and control mesh nodes. NFC, ANT, and 2.4 GHz proprietary protocols are also supported. It supports Bluetooth Low Energy and is capable of high-through-put 2 Mbps.

Rich peripheral flexibility

The nRF52832 has a plentiful array of peripherals and interfaces to enable complex single chip applications. All commonly found serial interfaces are supported. Additionally, there are dual PDM digital microphone inputs, QDEC and PWMs included on-chip. All peripherals and interfaces support EasyDMA memory mapping to improve performance, efficiency and simplicity when in use.

	nRF52805	nRF52810	nRF52811	nRF52820	nRF52832	nRF52833	nRF52840	nRF5340
Bluetooth 5.3	X	X	X	X	X	X	X	X
Bluetooth 2 Mbps	X	X	X	X	X	X	X	X
Bluetooth Long Range			X	X		X	X	X
Bluetooth Direction Finding			X	X		X		X
Bluetooth LE Audio								X
Bluetooth mesh				X	X	X	X	X
Thread			X	X		X	X	X
Zigbee				X		X	X	X
Matter							X	X

Key features

- Arm processor
 - 64 MHz Arm[®] Cortex-M4 with FPU
 - 512/256 KB Flash + 64/32 KB RAM
 - Cache
- Bluetooth 5.3 Radio
 - Long Range
 - Bluetooth mesh
 - +4 dBm TX power
 - -96 dBm sensitivity (1 Mbps)
- Programmable output power +4 dBm to -20 dBm
- Flexible and configurable 32 pin GPIO
- Automatic smart power management
- Full set of digital interfaces with DMA:
 - SPI
 - TWI
 - I²S
 - UART
 - PDM
 - QDEC
- 128 bit AES/ECB/CCM/AAR accelerator
- 12-bit 200 ksp/s ADC
- 1.7-3.6 V supply voltage range

Applications

- Smart Home
- Sensor Networks
- Building automation
- Medical
- Remote control
- Beacons
- PC peripherals
- Toys
- Wearables

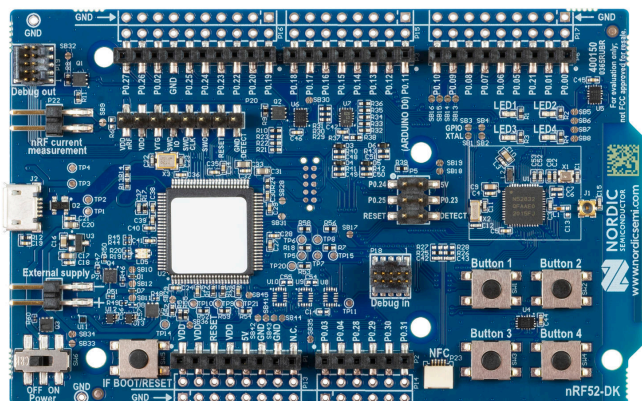
nRF Connect SDK

The [nRF Connect SDK](#) is our software development kit for the nRF52832 and the whole nRF52 Series. It supports development of Bluetooth Low Energy, Thread and Zigbee applications. It integrates the Zephyr RTOS, protocol stacks, samples, hardware drivers and much more. nRF Connect SDK also supports the nRF9160, our LTE-M/NB-IoT/GPS SiP, and the nRF53 Series. It is a common platform for both cellular IoT and short-range development.



Development Kit

The nRF52 DK is a single-board development kit (DK) for Bluetooth Low Energy, Bluetooth mesh, ANT and 2.4 GHz proprietary applications using the nRF52805 nRF52810 and nRF52832 SoCs. It facilitates development exploiting all features of the nRF52832 SoCs. It includes an NFC antenna that quickly enables utilization of the NFC-A tag peripheral on the nRF52832. The kit gives access to all I/Os and interfaces via edge connectors and has 4 LEDs and 4 buttons which are userprogrammable. The kit is compatible with the Arduino Uno Revision 3 standard, making it possible to use 3rd-party shields that are compatible t



Specification

Application core	
CPU	64 MHz Arm Cortex-M4
Memory	512/256 KB Flash + 64/32 KB RAM
Cache	8 KB cache
Performance	215 CoreMark
Efficiency	58 CoreMark/mA
Security features	AES-128/ECB/CCM/AAR
Security hardware	Arm TrustZone, Arm CryptoCell-312, SPU, KMU, ACL
Wireless protocol support	Bluetooth Low Energy/Bluetooth mesh/NFC/ANT/2.4 GHz proprietary
On-air data rate	Bluetooth LE: 2 Mbps/1 Mbps ANT: 1 Mbps2 Mbps and 1
TX power	Programmable from +4 to -20 dBm in 4 dB steps
RX sensitivity	Bluetooth LE: -96 dBm at 1 Mbps -89 dBm at 2 Mbps ANT -93 dBm at 1 Mbps
Radio current consumption	7.5 mA at +4 dBm TX power, 5.3 mA at 0 dBm TX power, DC/DC at 3 V 5.4 mA in RX at 1 Mbps
Oscillators	64 MHz from 32 MHz external crystal or internal 32 kHz from crystal, RC or synthesized
System current consumption	0.3 µA — No RAM retention 1.2 µA — All peripherals in IDLE mode 1.6 µA — All peripherals IDLE mode (32 kHz + RTC) 20 nA per 4 KB - RAM retention
Digital interfaces	SPI TWI I ² S UART PDM QDEC
Analog interfaces	12-bit, 200 ksp/s ADC low-power comparator general-purpose comparator
Other peripherals	4 × 32 bit timer/counter 2 × 24 bit real-time counter GPIOTE Temp sensor WDT PPI RNG
Temperature range	-40°C to 85°C
Supply voltage	1.7 to 3.6 V
Package options	6×6 mm aQFN48 with 32 GPIOs 3.0×3.2 mm WLCSP50 with 32 GPIOs

Related Products

nRF52 DK	Development kit for the nRF5340 SoC
nRF Connect SDK	Software development kit for the nRF5340