nRF52810
High performance, entry-level Bluetooth 5/ANT/2.4GHz SoC

A Bluetooth 5 SoC for everybody
The nRF52810 is the baseline member of the nRF52 Series SoC family. Together with the nRF52811, nRF52832 and the nRF52840 SoCs it completes our lineup of Bluetooth 5 devices that collectively offer the full spectrum of possibilities when designing Bluetooth® 5 into your products.

The nRF52810 supports the 2 Mbps bitrate of Bluetooth 5 giving increased application throughput and up to 50 % savings in energy usage. It supports channel selection algorithm #2 (CSA #2), improving the ability to coexist with other Bluetooth LE devices. It is an extremely cost-effective solution that makes it attractive in a wide range of applications.

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<tr>
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<th>Bluetooth 5</th>
<th>nRF52810</th>
<th>nRF52811</th>
<th>nRF52832</th>
<th>nRF52840</th>
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<tbody>
<tr>
<td>2 Mbps</td>
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<td>CSA #2</td>
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<td>Advertising Extensions</td>
<td>(X)</td>
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<td>Long Range</td>
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(X) Software support planned

Stand-alone performance or network processor
The nRF52810 is the ideal compromise between advanced performance, functionality and cost. It is more than powerful enough to be used as a stand-alone SoC in middle to lower tier applications. Or it can be the perfect companion network processor, combining Bluetooth 5 connectivity with a more powerful main application processor.

Over-the-air device firmware update
The nRF52810 and all nRF52 Series are flash-based SoCs and as such, fully support over-the-air device firmware updates (OTA DFU). This allows for in the field updates of application software and SoftDevices.

KEY FEATURES
- 64 MHz ARM® Cortex-M4
- 192 KB Flash + 24 KB RAM
- Bluetooth 5 2.4 GHz transceiver
  - 2 Mbps
  - CSA #2
  - Concurrent multiprotocol operation
  - +4 dBm TX Power
  - -96 dBm Sensitivity
  - 4.6 mA TX (0 dBm)
  - 4.6 mA RX (1 Mbps)
  - Integrated balun with 50 Ω single-ended output
- 1.7-3.6 V supply voltage range
- Integrated DC-DC regulator
- 0.3 µA in System OFF
- 1.5 µA in System ON with RTC
- Full range of digital interfaces with EasyDMA
- 12-bit 200 ksps ADC
- Small size

APPLICATIONS
- Beacons
- Network processor
- Disposable medical sensors
- PC peripherals
- Remote controls
- Fitness sensors
- Toys
- Logistics and tagging
- Airfuel wireless charging
SI12 SoftDevice
Our protocol stacks are called SoftDevices, and complement the nRF52 Series SoCs. SoftDevices are qualified, pre-compiled and link-free libraries that we provide. SoftDevices reside in separate memory space to the application and are interfaced by their API making application development simpler and more predictable.

The SI12 SoftDevice is a memory-optimized Bluetooth 5 protocol stack developed specifically for the nRF52810. High application throughput is available through the 2 Mbps bitrate of Bluetooth 5. It supports up to four peripheral connections with one concurrent broadcaster and is highly configurable, meaning it can be tailored to your application requirements.

nRF52810 compatible SoftDevices
- SI12: Memory-optimized Bluetooth 5 protocol stack for the nRF52810, nRF52811 and nRF52832 SoCs
- SI32: High performance Bluetooth 5 protocol stack for the nRF52810 and nRF52832 SoCs
- S212: ANT stack for the nRF52810 and nRF52832 SoCs
- S312: Combined Bluetooth 5 and ANT protocol stack for the nRF52810 SoC

RELATED PRODUCTS
- nRF52 DK: Development kit for nRF52810 and nRF52832 SoCs
- nRF52811: SoC for Bluetooth 5.1/802.15.4/Thread/Zigbee/ANT/2.4 GHz
- nRF52832: SoC for Bluetooth 5/Bluetooth mesh/ANT/2.4 GHz
- nRF52840: SoC for Bluetooth 5/Bluetooth mesh/802.15.4/Thread/Zigbee/ANT/2.4 GHz
- nRF5 SDK: Main software development kit for Bluetooth 5, ANT and 802.15.4
- Power Profiler Kit: Current measurement tool for embedded development

SPECIFICATIONS
- Protocol support: Bluetooth 5/ANT/2.4 GHz proprietary
- Microprocessor: 64 MHz 32-bit ARM Cortex-M4
- Memory: 192 KB Flash + 24 KB RAM
- On-air data rate: 2 Mbps/1 Mbps
- TX power: Programmable from +4 to -20 dBm in 4 dB steps
- Sensitivity: Bluetooth 5:
  - 93 dBm at 2 Mbps
  - 96 dBm at 1 Mbps
  - 93 dBm at 1 Mbps
  - 96 dBm at 1 Mbps
  - 96 dBm at 1 Mbps
- ANT:
  - 93 dBm at 1 Mbps
- 2.4 GHz:
  - 93 dBm at 2 Mbps
  - 96 dBm at 1 Mbps
- System current consumption:
  - DC/DC at 3 V
  - 7.0 mA at +4 dBm TX power
  - 4.6 mA at 0 dBm TX power
- Oscillators: 64 MHz from 32 MHz external crystal or internal 32 kHz from crystal, RC or synthesized
- System current consumption:
  - DC/DC at 3 V
  - 0.3 μA in System OFF, no RAM retention
  - 0.5 μA in System OFF, full RAM retention
  - 0.6 μA in System ON, no RAM retention
  - 0.8 μA in System ON, full RAM retention
  - 1.5 μA in System ON, full RAM retention and RTC
- Hardware security: 128-bit AES CCM, ECB, AAR
- Digital interfaces:
  - SPI master/slave
  - TWI master/slave
  - UART
  - PWM
  - QDEC
  - PDM
- Analog interfaces:
  - 12-bit 200 ksps ADC, RNG, GP comparator
- Peripherals:
  - 3 x 32-bit Timer
  - 2 x 24-bit RTC
  - 20 x PPI channels
  - 4 x GPIO TE
  - Watchdog timer
  - RNG
  - Temperature sensor
  - BPROT — flash protection
- Voltage supply: 1.7 to 3.6 V LDO or DC/DC
- Package options: 6 x 6 QFN48 with 32 GPIOs
  - 5 x 5 QFN32 with 16 GPIOs
  - 2.48 x 2.46 WLCSP33 with 15 GPIOs

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.