nRF7000 Product Specification

NORDIC SEMICONDUCTOR

Contents

1. nRF7000 Product Specification

This Product Specification contains functional descriptions, register tables, and electrical specifications, and is organized into chapters based on the modules and peripherals that are available in this IC.

- nRF7000 Product Specification v1.1
- nRF7000 Product Specification v1.0

Note: The HTML rendition of the Product Specification corresponds to the latest version only. All versions are available as PDF files.

Key features	Applications

• Companion IC with integrated RF for passive and active Wi-Fi® scanning
• Compatible with IEEE 802.11 ax and earlier standards (IEEE 802.11 a/b/g/n/ac)
• Maximum output power 21 dBm
• Dual-band 2.4 GHz and 5 GHz operation
• Single-ended 50 Ω antenna port
• 252 mA @ max output power, 2.4 GHz, 1DSSS
• 260 mA @ max output power, 5 GHz, 6Mbps
• 60 mA RX 2.4 GHz, 56 mA RX 5 GHz
• SPI or QSPI host interface, 3-wire or 4-wire coexistence interface
• Supply voltage range 2.9 – 4.5 V
• Operating temperature range -40° C to 85° C
• 6x6 mm QFN48 package
	• Wi-Fi locationing based on SSID scanning
	  • Asset tracking
	  • Indoor navigation
	  • Biking and sports tracking

Revision history

About this document This document is organized into chapters that are based on the modules and peripherals available in the IC.

Product overviewnRF7000 is a wireless companion IC that adds low-power dual band Wi-Fi scanning capabilities to another *System on Chip (SoC)*, *Microprocessor Unit (MPU)*, or *Microcontroller Unit (MCU)* host. It implements the *Physical (PHY)* layer and necessary parts of the *Medium Access Control (MAC)* layer related to scanning.

Host connectionnRF7000 is a wireless companion device that is connected to a host *MCU* or application processor. It is connected to the host through a *Quad Serial Peripheral Interface (QSPI)* (6-wire) or *Serial Peripheral Interface (SPI)* (4-wire) for data and a 3-wire or 4-wire coexistence control interface for hosts that include a Bluetooth® LE/IEEE 802.15.4 radio. In addition, two lines (HOST_IRQ and BUCKEN) are required. The user application executes on the host MCU.

Power and clock management The power and clock management system in nRF7000 is optimized for ultra-low power applications to ensure maximum power efficiency.

Software stack This section details the partitioning of the networking stack and the IEEE 802.11 Wi-Fi stack across the host *MCU* and nRF7000.

Quad Serial Peripheral Interface The *SPI/QSPI* slave interface is compatible with the nRF52, nRF53, and nRF91 Series SPI/QSPI master interface.

CoexistencenRF70 Series devices have a highly configurable coexistence hardware to help mitigate interference between WLAN and Bluetooth® LE/IEEE 802.15.4 devices (Thread®, Zigbee®).

OTP memory programmingnRF7000 includes a 128 x 32-bit *One Time Programmable (OTP) memory*. This memory is partitioned into two regions, a factory programmed region and a customer programmed region, each containing 64 x 32-bit locations.

FICR - Factory Information Configuration Registers The Factory Information Configuration Registers (FICR) are stored in the *OTP memory*.

Recommended operating conditions The operating conditions are the physical parameters that the chip can operate within.

Absolute maximum ratings Maximum ratings are the extreme limits to which the chip can be exposed for a limited amount of time without permanently damaging it. Exposure to absolute maximum ratings for prolonged periods of time may affect the reliability of the device.

Electrical specification This section provides a summary of nRF7000 electrical specifications.

Hardware and layout This section describes nRF7000 hardware and layout specifications.

Ordering information This chapter contains information on IC marking, ordering codes, and container sizes.

GlossaryThe glossary contains terms and acronyms that are used in this document.

Notifications related to GNU GPL SoftwareA core within the nRF7000 device uses copyrighted software that is licensed under the GPL.

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