NHS52S04: Ultra-Low-Power Bluetooth® Low Energy Solution With Arm® Cortex®-M33 TrustZone® for Medical IoT

NHS52S04

Last Updated: Feb 16, 2024

The NHS52S04 provides connectivity solutions for medical IoT applications. The NHS52S04 device constitute a highly integrated, single chip, ultra-low-power Bluetooth® Low Energy 5.3 wireless transceiver with embedded microcontroller and flash.
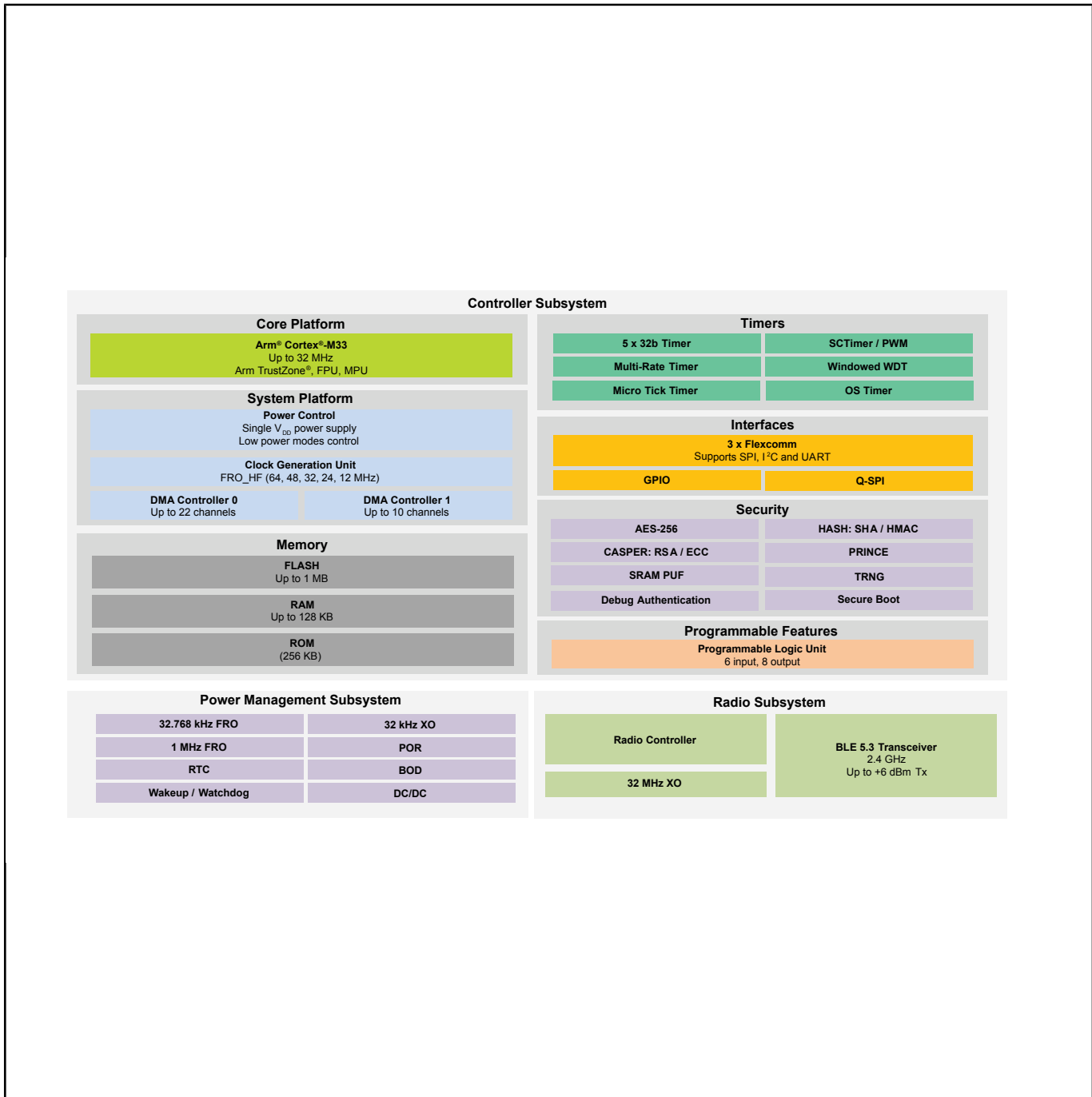
Because of the integrated ultra-low-power radio and flash, the NHS52S04 provides extended battery lifetime. The NHS52S04 is a cost-effective solution within a small solution area required for body-worn sensors and actuator applications like smart skin patches, smart inhalers and vital signs monitoring.

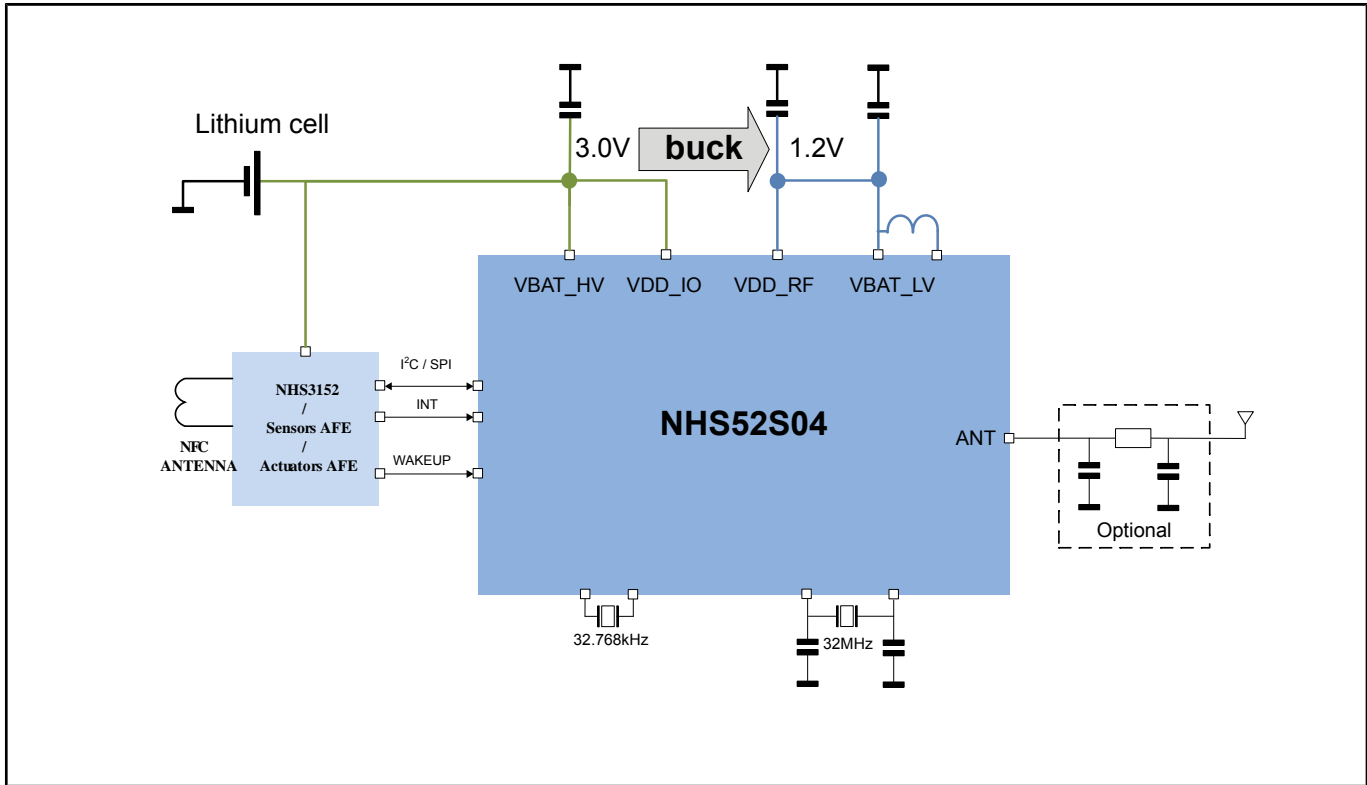The NHS52S04 runs directly from a Lithium battery or from an external PMIC-based product architecture.

Built with advanced security in mind, the NHS52S04 is part of the NXP EdgeLock® Assurance program.

NHS52S04 and enablement (documentation, software and boards) are available for select customers. For additional information and sample availability, contact support or your local sales representative.
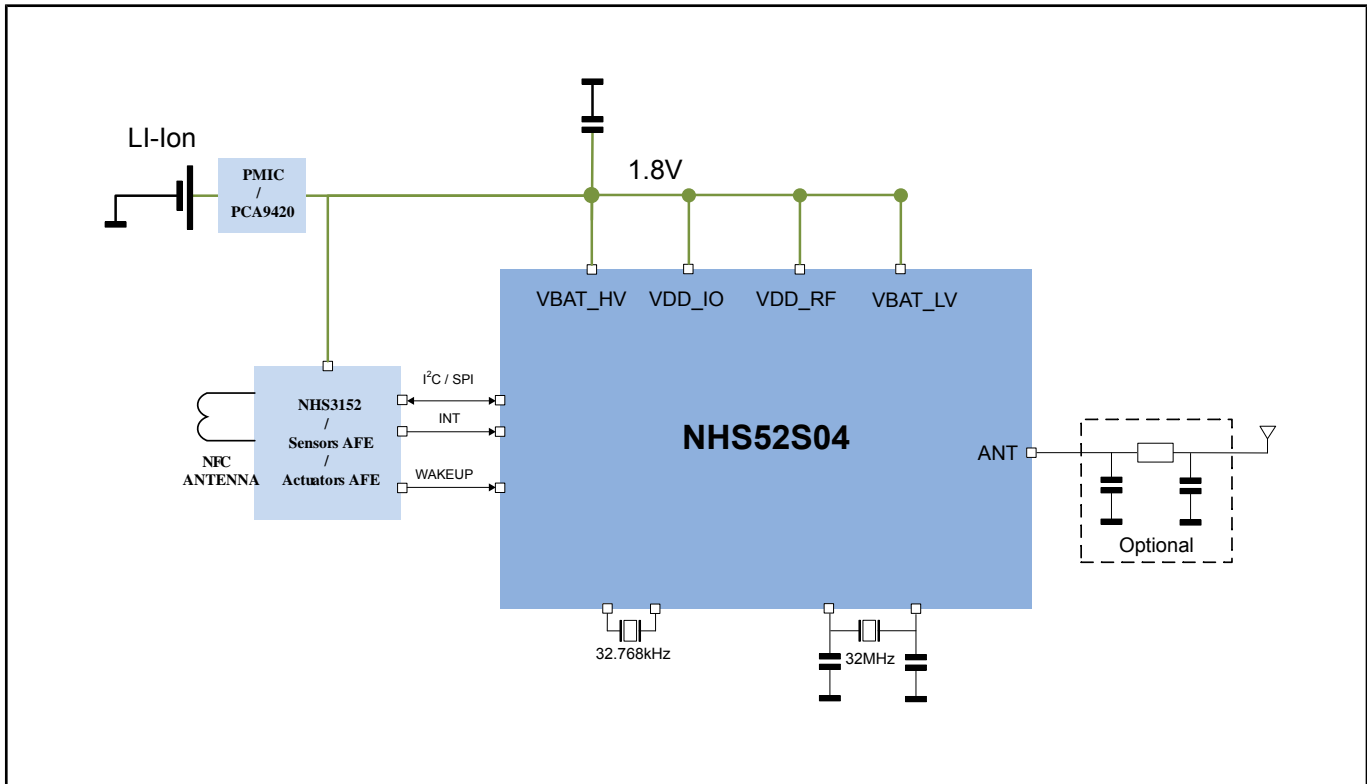
NHS52S04 Block Diagram

Controller Subsystem

Core Platform

Arm® Cortex®-M33
Up to 32 MHz
Arm TrustZone®, FPU, MPU

System Platform

Power Control
Single V_{DD} power supply
Low power modes control

Clock Generation Unit
FRO_HF (64, 48, 32, 24, 12 MHz)

DMA Controller 0	DMA Controller 1
Up to 22 channels	Up to 10 channels

Memory

FLASH
Up to 1 MB

RAM
Up to 128 KB

ROM
(256 KB)

Timers

5 x 32b Timer	SCTimer / PWM
Multi-Rate Timer	Windowed WDT
Micro Tick Timer	OS Timer

Interfaces

3 x Flexcomm
Supports SPI, I²C and UART

GPIO	Q-SPI

Security

AES-256	HASH: SHA / HMAC
CASPER: RSA / ECC	PRINCE
SRAM PUF	TRNG
Debug Authentication	Secure Boot

Programmable Features

Programmable Logic Unit
6 input, 8 output

Power Management Subsystem

32.768 kHz FRO	32 kHz XO
1 MHz FRO	POR
RTC	BOD
Wakeup / Watchdog	DC/DC

Radio Subsystem

Radio Controller

32 MHz XO

BLE 5.3 Transceiver
2.4 GHz
Up to +6 dBm Tx

NHS52S04 with 3 V Lithium Cell Block Diagram

NHS52S04 with PMIC Block Diagram

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