Lowest power
Bluetooth® 5 SoC

QN908x Ultra-low-power BLE System on Chip portfolio

These latest NXP Bluetooth low energy devices have the lowest power consumption of any Bluetooth® 5 devices on the market. These highly integrated devices allow for the design of small form-factor products with rich feature sets that can operate for multiple years on small coin cell batteries.

TARGET APPLICATIONS

▸ Wearables

▸ Health devices

▸ Sports and fitness trackers

▸ HID devices such as keyboards, mice, and remote control units

▸ Smart home nodes

▸ Building and home automation

▸ Retail and advertising beacons

OVERVIEW

Supporting Bluetooth 5, the QN908x portfolio is designed to power the next generation of ultra-small, portable connected wireless devices. With several low-power modes and best-inclass active TX and RX power consumption, devices powered by QN908x can operate longer on smaller batteries. Internally, it is powered by an Arm Cortex-M4F and has a dedicated fusion sensor co-processor (FSP) to further reduce power consumption by offloading complex math computations to hardware. 512 KB onboard flash and 128 KB SRAM provide enough room and flexibility for complex applications.
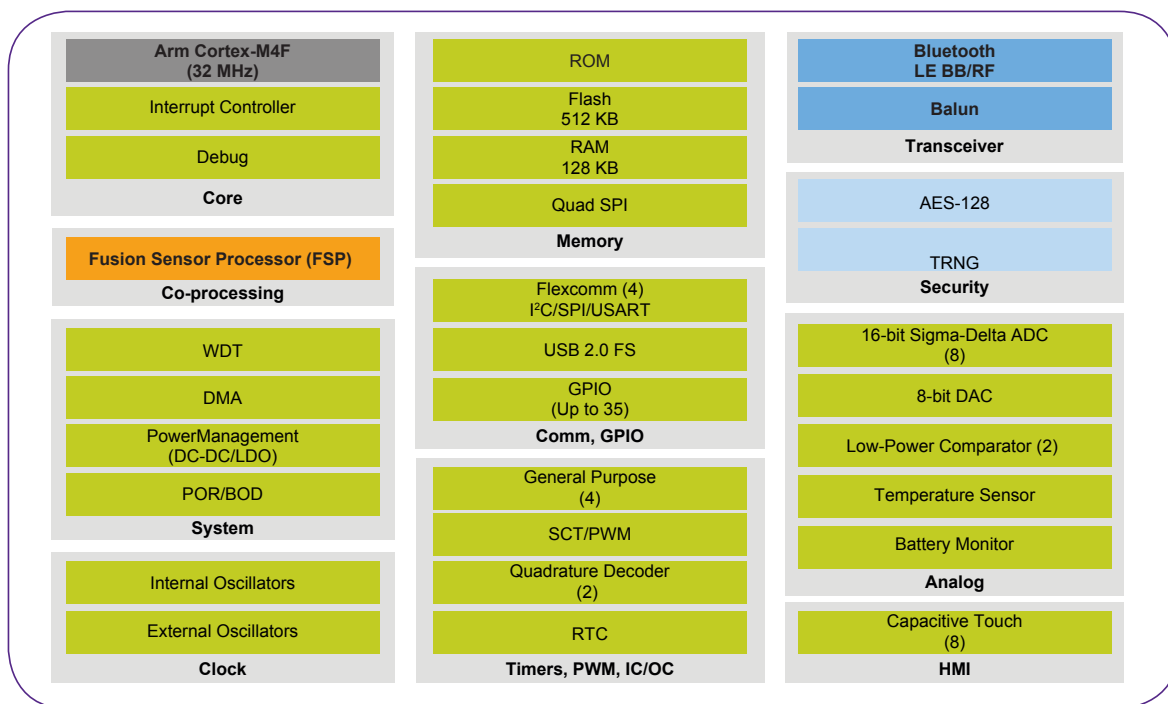
To reduce development time, the QN9080 platform has an integrated balun as well as a buck DC-DC converter. Its low external component count reduces overall system size, complexity, and cost.

SUPPORT

The QN9080 development platform comes with an integrated programmer and debugger along with a rich suite of example applications and software in a complete software development kit (SDK) compatible with the latest toolchains from Arm-Keil, IAR, and NXP's MCUXpresso. MCUXpresso support provides a seamless software portfolio among all NXP devices as well as a fast path to add BLE capability to existing code based on another NXP device.

QN908X BLOCK DIAGRAM

Core
- Arm Cortex-M4F (32 MHz)
- Interrupt Controller
- Debug

Co-processing
- Fusion Sensor Processor (FSP)

System
- WDT
- DMA
- PowerManagement (DC-DC/LDO)
- POR/BOD

Clock
- Internal Oscillators
- External Oscillators

Memory
- ROM
- Flash 512 KB
- RAM 128 KB
- Quad SPI

Comm, GPIO
- Flexcomm (4) I²C/SPI/USART
- USB 2.0 FS
- GPIO (Up to 35)

Timers, PWM, IC/OC
- General Purpose (4)
- SCT/PWM
- Quadrature Decoder (2)
- RTC

Transceiver
- Bluetooth LE BB/RF
- Balun

Security
- AES-128
- TRNG

Analog
- 16-bit Sigma-Delta ADC (8)
- 8-bit DAC
- Low-Power Comparator (2)
- Temperature Sensor
- Battery Monitor

HMI
- Capacitive Touch (8)

BLUETOOTH SMART WIRELESS MCU PORTFOLIO

Features	Benefits
3.5 mA TX / 3.5 mA RX peak current, DC-DC enabled	Extends battery life and allows for smaller form-factors
-95 dBm RX sensitivity -20 dBm to +2 dBm TX output power	High sensitivity allows for a more robust link budget. Integrated balun reduces system size and cost.
32 MHz Arm Cortex® –M4F core 512 KB flash memory 128 KB SRAM	High-performance Arm core with ample room for user applications.
32 MHz Fusion Sensor Processor (FSP)	Co-processor allows for hardware acceleration of complex sensor fusion algorithms
Compatible with Keil, IAR and MCUXpresso SDKs	Example projects support industry standard Keil and IAR toolchains. MCUXpresso support allows for easy code migration based on other NXP devices.
6mm x 6mm QFN and 3.2mm x 3.2mm WLCSP packaging	Small packages with low component count reduces overall system size and cost
Supports up to 16 simultaneous links	Allows for the creation of large, complex BLE sensor networks
LE 2M PHY with Bluetooth 5 compatibility	Doubles data throughput for more use cases, improves user experience and lowers average power consumption

QN9080 PORTFOLIO

Part Number	2.4 GHz RF Capability	Flash / RAM (KB)	Package (mm)
QN9080	Bluetooth 5, 2.4 GHz proprietary	512 / 128	6 x 6 QFN
QN9083	Bluetooth 5, 2.4 GHz proprietary	512 / 128	3.2 x 3.2 WLCSP

Part Number	Description
QN9080-DK	Development Kit