Application brief

Wrist-worn wearable devices

Overcome design challenges with Infineon's excellent RF, sensor, connectivity, power, memory and security solutions

A **smartwatch** is a wrist-worn wearable device that provides a two-way connection via Bluetooth®, cellular baseband or Wi-Fi to a smartphone. It receives electronic communications like texts or voice calls, also showing the time and other alerts on its glanceable display. In addition, these convenient lifestyle devices support health, fitness and activity tracking. Different generations/versions of smartwatches are available.

A **sports watch** is a highly functional, robust and usually water-resistant device. It is typically used by leisure and professional athletes to monitor health metrics, fitness and sleep patterns. Sports watches have fewer features than smartwatches, with the main design focus on sports tracking.

A **wristband** or **fitness tracker** is a wrist-worn device tailored to activity-tracking and health-monitoring functions. Designs can vary from a simple pedometer for step counting to more sophisticated use cases such as sleep monitoring, location tracking and access control.

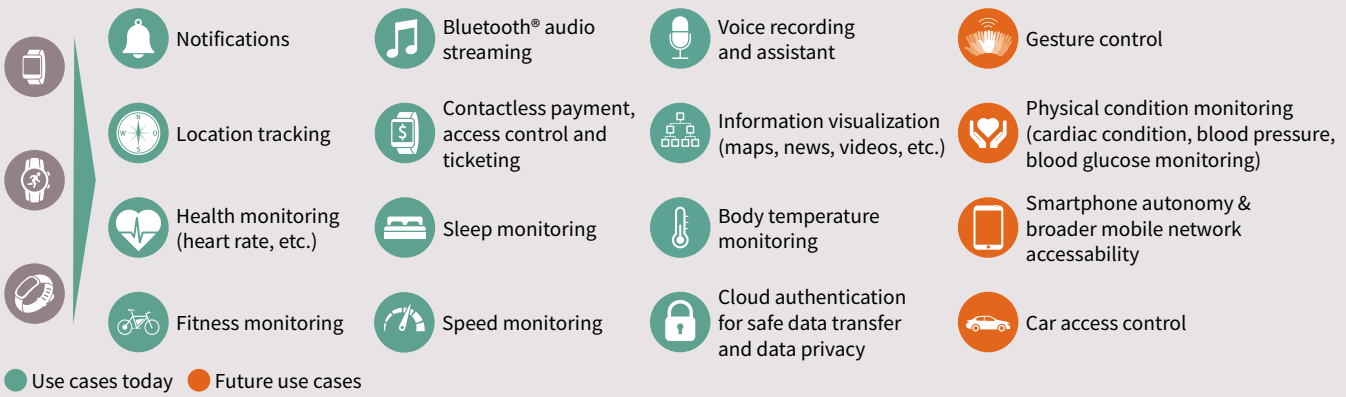
Highlights wearable offering

- Increased battery lifetime
- Enhanced productivity for the device
- Easy-to-integrate turnkey security solutions
- Robust, secured battery authentication
- Reduced system size and cost
- Quality and technology leadership
- One-stop-shop
- Fast time-to-market with best-in-class support

A **medical wrist-worn** device measures physical activity and general health stats such as heart rate and blood pressure. They can even tell if the wearer has fallen. By supporting connected health, they enable elderly people in particular to live independently and safely.

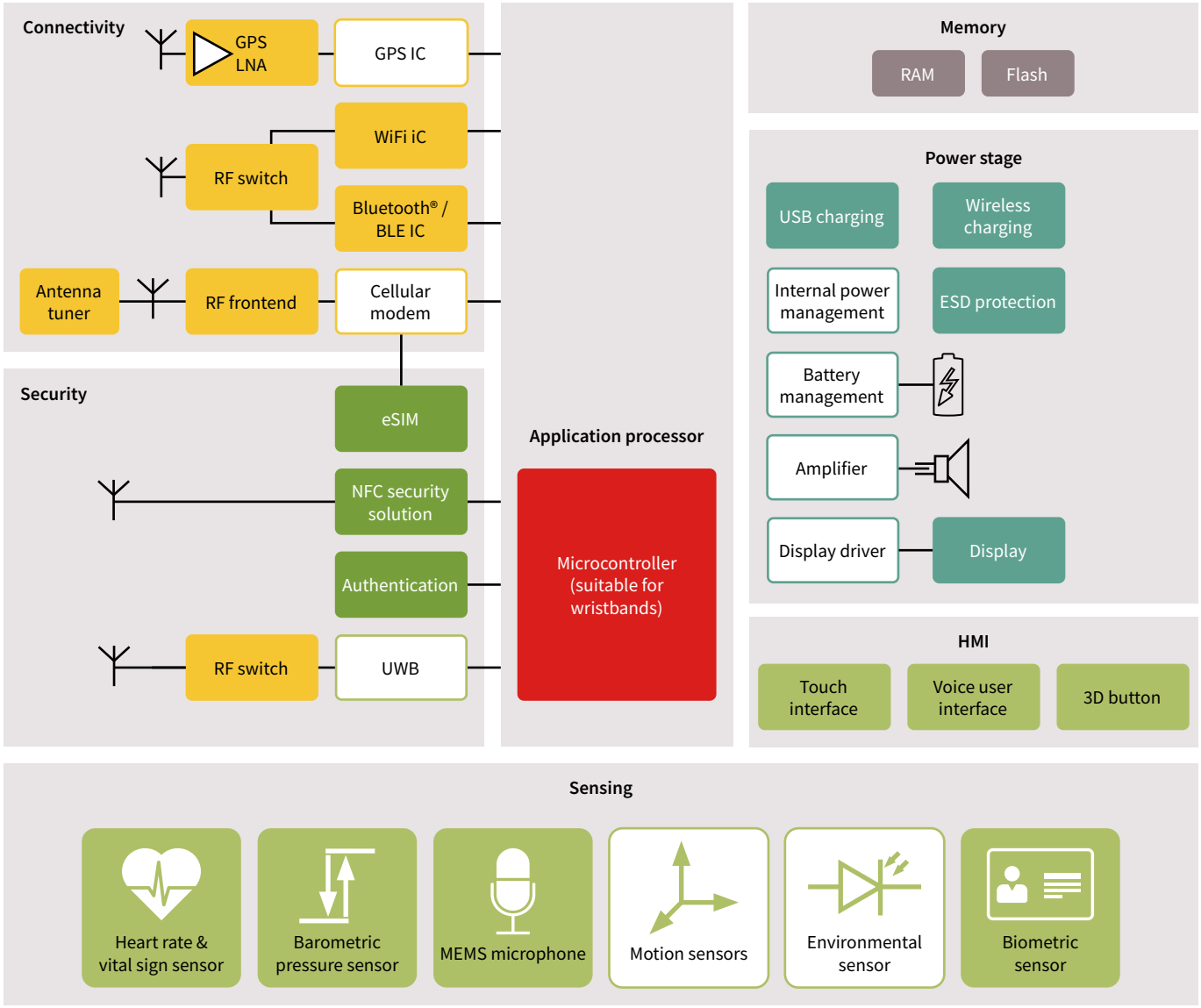
With its broad product portfolio, Infineon helps wearable manufacturers to overcome design challenges across all device categories. These include the need for robust device and data security to protect personal and sensitive information, accurate sensor readings for precise location tracking and to differentiate between everyday movements and a fall event for instance, longer battery lifetimes and small form factors for elegant, unobtrusive designs. Infineon's widely-deployed Wi-Fi and Bluetooth® combo ICs offer the industry's best interoperability and RF performance. Infineon also helps customers to differentiate their offerings with highly efficient, secured and innovative solutions supporting the integration of additional use cases such as smart payment and ticketing, notifications and voice calls, bluetooth audio streaming, smart access or different ways of charging (wireless, NFC, USB).

Main use cases for smartwatches, sports watches and wristbands



www.infineon.com/wearables

Example: smartwatch – block diagram



Key enabling products from Infineon

- XENSIV™ 3D image sensor REAL3™
- XENSIV™ 3D magnetic sensor
- XENSIV™ 60 GHz radar sensor
- XENSIV™ pressure sensor
- XENSIV™ MEMS microphones
- Wireless charging
- AIROC™ Wi-Fi & Combos
- AIROC™ Wi-Fi
- Wi-Fi MCUs
- SECORA™ CONNECT
- PSoC™ 63 microcontrollers
- PSoC™ 4 Bluetooth® Low Energy (Bluetooth® Smart)
- PSoC™ 4 including CAPSENSE™ technology
- RF switches
- OPTIGA™ Connect consumer eSIM solution
- OPTIGA™ Authenticate IDoT
- NOR Flash / F-RAM
- GPS LNA
- ESD protection
- AIROC™ Bluetooth® LE & Bluetooth®
- AIROC™ Bluetooth® 5.0 SOC for audio
- Antenna tuners
- 4G / 5G LTE LNAs

Choose the right partner for the design of your smartwatches, sports watches, wristbands or medical wrist-worn devices

Highest accuracy and fast signal pick-up for location tracking and altitude measurement

Secure cellular network connection

Products with smallest form factors enable high functional integration

Integrated lowest power compute, BLE connectivity and most robust capacitive touch

Bluetooth® audio streaming streaming with BT / BLE combo SoC

Precise detection of single steps, body motions or fall events

USB-C fast charging capability

Lowest power, high reliability data storage

Easy, convenient and secure data transmission by NFC

Device protection to enable high user experience

High reliability and data throughput with Wi-Fi / BT connectivity

Low power consumption to increase battery lifetime

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