STM32WB WIRELESS SERIES

Bluetooth LE 5.2 & IEEE 802.15.4

Deliver best-in-class IoT solutions with built-in key storage, OTA firmware updates and protocol concurrency control

A wireless dual-core brain
The STM32WB series is a dual-core, multi-protocol and ultra-low-power 2.4 GHz MCU system-on-chip. It supports Bluetooth® LE 5.2 as well as IEEE 802.15.4 protocols (in Single and Concurrent modes) covering a wide spectrum of IoT application needs. Based on ST’s best-in-class, ultra-low-power MCU with wide peripheral set, the STM32WB series reduces development time, BOM cost, and extends application battery life. STM32WB inspires innovation.

Bluetooth® LE 5.2 & IEEE 802.15.4
The STM32WB SoC offers multi-protocol stacks including Bluetooth® 5.2, OpenThread, Zigbee 3.0, proprietary protocols and concurrent mode, for best in-class RF performance. Dedicated core to radio activity provides SW flexibility and better user experience.

IP Protection
STM32WB devices offer device integrity and industrial IP protection features to meet manufacturers’ increasing demand for brand protection.

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
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<tr>
<td>Dual-core solution in a single die</td>
<td>Dual-core solution with independent clock trees ensures real-time RF execution and optimized PCB and BOM</td>
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<td>TX: 5.2 mA, RX: 4.5 mA</td>
<td>Extended battery life time. Perfect fit for coin cell battery</td>
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<td>BLE: –96 dBm, 802.15.4: –100 dBm</td>
<td>Comfortable and robust operating distance of connection</td>
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<td>Integrated balun, USB 2.0 crystal-less, LCD driver</td>
<td>Reduces BOM cost and PCB footprint</td>
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<td>OTA firmware updates, customer key storage</td>
<td>Easy fleet maintenance, brand and IP protection</td>
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</table>

Note*: Features availability or characteristics depend on STM32WB reference
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STM32WB55 BLOCK DIAGRAM

Control
- Power supply: 1.7 to 3.6 V w/ DC/DC + LDO POR/PDR/PVD/BOR
- Xtal oscillators: 32 MHz (RF) 32.769 kHz (LSI)
- Internal RC oscillators: 32 kHz ± 4~48 MHz + 16 MHz (HSI) ± 48 MHz ± 1% acc. over V and T(°C)
- RTC/AWU/CSS
- PLL/PLL
- SysTick timer
- 2 watchdogs (WWDG/WDG)
- 32 MHz (RF)
- 32.769 kHz (LSE)
- 4 ~ 48 MHz + 48 MHz ± 1% acc. over V and T(°C)
- JTAG/SW debug

Multi-protocol RF stack
- Bluetooth® LE
- IEEE 802.15.4
- AES

Memory
- Up to 1-Mbyte Flash memory
- Up to 256-Kbyte SRAM
- Boot ROM
- Secure boot loader

Connectivity
- 2 x SPI, 2 x I²C
- 1 x USART, LIN, Smartcard, IrDA
- 1 x ULP UART
- USB 2.0 FS - Xtal less
- Quad-SPI (XIP)
- SAI (full duplex)

STM32WB PORTFOLIO

Flash memory size / RAM size (bytes)
- 1M / 256K
- 1M / 128K
- 640K / 256K
- 512K / 96K
- 256K / 96K
- 256K / 128K
- 320K / 48K
- 129-pin VQFN
- 100-pin WLCSP
- 68-pin LGA
- 49-pin WLCSP
- 48-pin UQFN
- 86-pin LGA
- 129-pin UFBGA
- 100-pin WLCSP

Legend:
- Standard line
- Value line
- Module line
- New
- from 1.7 to 3.6 V
- from -40°C to +105°C

STM32WBx0 VALUE LINE

EMBEDDED SOFTWARE

SOFTWARE TOOLS

HARDWARE TOOLS

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