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STMicroelectronics' new integrated STM32WBA6 wireless microcontrollers combine extra features and performance with power efficiency

Cost-efficient and highly integrated embedded devices for emerging 2.4GHz wireless applications in smart home, health, factory, and agriculture

Geneva, Switzerland, March 4, 2025 – STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, has announced the next generation of its STM32 power-efficient short-range wireless microcontrollers (MCUs) that simplify connecting consumer and industrial devices to the IoT.

The new STM32WBA6 series is used in connected, smart devices like wearable healthcare and wellness monitors, animal collars, electronic locks, remote weather sensors, and more. Packing extra memory and digital system interfaces, while preserving energy efficiency the new MCUs can handle richer functionality in emerging new product designs.

The STM32WBA6 MCUs also embed SESIP3 and PSA Level3 certifiable security assets, such as cryptographic accelerators, TrustZone® isolation, random generator, and product lifecycle that will contribute and enable ST customers to reach compliancy towards the upcoming RED and CRA regulations.

"*Robust and standardized wireless connectivity is central to the IoT's success. Our new STM32WBA6 MCUs bring richer features and larger memory to address high-end applications in smart home, health, factory, and agriculture*," said Patrick Aidoune, General-Purpose MCU Division General Manager, STMicroelectronics. "*Our customers can now increase the pace of development to meet demands from consumer and industrial markets for new products that deliver more features and increased capabilities within reduced size and power constraints.*"

The wireless subsystem in the new STM32WBA6 microcontrollers supports Bluetooth, Zigbee, Thread, Matter, and other protocols operating in the 2.4GHz frequency band, and allows communication using multiple protocols concurrently. It's how a system like a smart-home bridge can communicate with the homeowner's mobile app over Bluetooth and simultaneously manage lights or thermostats through mesh networking such as Zigbee. The STM32WBA6 series also contains single-protocol variants for simpler and more cost-conscious applications.

Customer testimonials:

"*The extensive hardware feature set, low power consumption, advanced cyber security, and excellent price/performance make the STM32WBA6 devices perfect for our advanced in-car driver monitoring, incident tracking, and emergency calling solution. Aided by the extensive ecosystem and ST's strong technical support, we were able to quickly start prototype development and achieve qualification in accordance with all applicable industry requirements. We are on track to begin production in Q2 2025,*" said Vittorio Ferrari, CTO, Meta System.

Technical notes for editors:

- By integrating the processing core, peripherals, and wireless subsystem, STM32WBA6 MCUs help product developers meet demands to simplify new designs, miniaturize assembly size, and save the electronic bill-of-materials. With up to double the Flash and RAM on-chip, compared to the previous STM32WBA5 series, the new MCUs provide generous storage for application code and data.
- With up to 2MB of Flash and 512KB RAM on-chip, the new STM32WBA6 MCUs contain larger memory to support more sophisticated applications.
- The richer digital peripherals add USB High Speed as well as extra digital interfaces including three SPI ports, four I2C ports, three USARTs, and one LPUART.
- Concurrent multiprotocol wireless makes the STM32WBA6 series ideal for applications that leverage Matter, which is designed to run on top of other protocols. The X-CUBE-MATTER software package, part of the extensive STM32Cube ecosystem, integrates the Matter SDK and comes with application examples to ease development.
- The wireless subsystem improves performance, with sensitivity increased to -100dBm for more reliable connectivity up to the maximum specified range.
- The STM32WBA6 series is powered by the energy-efficient Arm® Cortex®-M33 core, with floating-point unit and DSP extensions, running at up to 100MHz.
- The STM32WBA5 and STM32WBA6 support the latest EU Radio Equipment Directive (RED) cyber-security requirements. Their SESIP3 certification target will greatly ease the customer device conformance.
- Package options cover a wide range from a 7mm x 7mm UFQFPN48 to a 6mm x 6mm UFBGA121 with 121 pins.
- There is also a thin wafer-level chip-scale package, WLCSP88, that measures only 3.78mm x 3.46mm.

The STM32WBA6 MCUs are in production and available now, priced from $2.50 for orders of 10,000 pieces. For more information, please go to www.st.com/stm32wba.

About STMicroelectronics
At ST, we are 50,000 creators and makers of semiconductor technologies mastering the semiconductor supply chain with state-of-the-art manufacturing facilities. An integrated device manufacturer, we work with more than 200,000 customers and thousands of partners to design and build products, solutions, and ecosystems that address their challenges and opportunities, and the need to support a more sustainable world. Our technologies enable smarter mobility, more efficient power and energy management, and the wide-scale deployment of cloud-connected autonomous things. We are on track to be carbon neutral in all direct and indirect emissions (scopes 1 and 2), product transportation, business travel, and employee commuting emissions (our scope 3 focus), and to achieve our 100% renewable electricity sourcing goal by the end of 2027.

Further information can be found at www.st.com.

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