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STMicroelectronics introduces the industry's first 18nm microcontroller for high-performance applications

- ❖ *STM32V8 is the first microcontroller designed using next-generation 18nm FD-SOI technology, with advanced phase-change embedded memory (PCM)*
- ❖ *Selected by SpaceX for high-speed connectivity system in Starlink satellite network*
- ❖ *Perfectly fitted for the most demanding industrial applications such as factory automation, motor control and robotics*

Geneva, November 18, 2025 – STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, has unveiled the STM32V8, a new generation of high-performance microcontrollers (MCUs) for demanding industrial applications. The STM32V8 is designed with ST's most advanced 18nm process technology with best-in-class embedded phase-change memory (PCM). It is manufactured in ST's 300mm fab in Crolles, France, and also in collaboration with Samsung Foundry. MCUs are foundational chips, with the broad portfolio of STM32 devices powering billions of devices on the planet across consumer devices, home appliances, industrial applications, medical devices and communication nodes.

"The [STM32V8](#) is our fastest STM32 microcontroller to date, designed for high reliability in harsh operating environments, with the ability to replace much larger and power-hungry application processors. The STM32V8 represents the future of what a high performance MCU can do for demanding embedded and edge AI applications such as industrial control, sensor fusion, image processing, voice control, and others," said Remi El-Ouazzane, President, Microcontrollers, Digital ICs and RF products Group at STMicroelectronics.

Thanks to its Arm® Cortex®-M85 core and the 18nm process, the STM32V8 achieves clock speeds of up to 800 MHz, making it the most powerful STM32 MCU ever shipped. High levels of faster and larger embedded memory are a key enabler of a broad range of secure and connected applications. The FD-SOI process technology with embedded PCM provides strong robustness and reliability in harsh operating environments.

One such demanding environment is the high-radiation conditions encountered in Low Earth Orbit (LEO). SpaceX has selected the STM32V8 for its Starlink constellation, using it in a mini laser system that connects the satellites traveling at extremely high speeds in LEO.

"The successful deployment of the Starlink mini laser system in space, which uses ST's [STM32V8 microcontroller](#), marks a significant milestone in advancing high-speed connectivity across the Starlink network. The STM32V8's high computing performance and integration of large embedded memory and digital features were critical in meeting our demanding real-time processing requirements, while providing a higher level of reliability and robustness to Low Earth Orbit environment, thanks to the 18nm FD-SOI technology. We look forward to integrating the STM32V8 into other products and leveraging its capabilities for next-generation advanced applications," said Michael Nicolls, Vice President, Starlink Engineering at SpaceX.

The STM32V8 is in early-stage access for selected customers with key OEMs availability as of the first quarter 2026 and with broader availability to follow.

Technical information

The STM32V8 leverages the latest-generation Arm® Cortex®-M85, the highest-performing core in the series, to handle complex applications and maintain extremely high energy efficiency. ST's silicon-on-insulator (FD-SOI) technology offers exceptional energy efficiency and robustness, supporting a maximum junction temperature of up to 140°C.

The STM32V8's [phase-change non-volatile memory \(PCM\)](#) has the smallest cell size on the market, enabling 4MB of embedded non-volatile memory (NVM), and delivering high integration while maintaining excellent cost efficiency.

The MCU also incorporates state-of-the-art security features leveraging the STM32 Trust framework as well as the latest cryptographic algorithms and lifecycle management standards. Targeting PSA Certified Level 3 and SESIP certification, the STM32V8 is ready to accelerate compliance with the incoming Cyber-Resilience Act (CRA).

The 3.3V support in the STM32V8 brings a number of benefits for industrial applications, including lower power consumption, better signal integrity, and integration with modern industrial communication standards.

The MCU integrates special accelerators, including graphic, crypto/hash, and comes with a large selection of IP, including 1Gb Ethernet, rich digital interfaces (FD-CAN, octo/hexa xSPI, I2C, UART/USART, USB), analog peripherals, and timers.

While delivering MPU-class processing performance in an MCU, the STM32V8 supports bare-metal or RTOS-based development for optimal system behavior, boot time, resource usage, and attack resistance.

The device is supported in the STM32 development ecosystem including STM32Cube software development and turnkey hardware including Discovery kits and competitively priced Nucleo evaluation boards. For more information, please go to [st.com/stm32v8](https://www.st.com/stm32v8)

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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