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STMicroelectronics introduces its second generation of Industry 4.0-ready Edge AI powered microprocessors

ST's new STM32MP2 series 64-bit microprocessors come with SESIP Level 3 certification, industrial-application-ready interfaces and dedicated Edge AI acceleration

Geneva, Switzerland, May 15, 2023 – STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, has introduced the second generation of its STM32 MPUs (microprocessors), coming with a new architecture built upon the same ecosystem and raising performance and security for applications at the industrial and IoT edge.

"*The new STM32MP2 Series devices further our investment in application processors, combining 64-bit cores with Edge AI acceleration, advanced multimedia features, graphics processing, and digital connectivity*," said Ricardo De Sa Earp, Executive Vice-President and General-Purpose Microcontrollers Sub-Group GM, STMicroelectronics. "*Also integrating advanced security features in hardware, the new MPUs are ready for emerging opportunities in secure Industry 4.0, IoT, and rich user-interface applications*."

The first product line in this new generation, the STM32MP25, is available with single or dual 64-bit Arm® Cortex®-A35 cores running efficiently at 1.5GHz, complemented with a 400MHz Cortex-M33 embedded core that handles real-time processing. A dedicated neural processing unit (NPU) adds up to 1.35 TOPS (tera-operations per second) of computing muscle optimized for Edge AI acceleration in applications such as advanced machine vision and predictive maintenance. With support for 32-bit DDR4 and LPDDR4 memories, the STM32MP25 ensures long-term support for cost-optimized designs.

Also featuring Gigabit time-sensitive networking (TSN) support and a two-port Gigabit Ethernet TSN switch, with PCIe, USB 3.0, and CAN-FD peripherals, the STM32MP25 product line provides intensive connectivity for real-time industrial applications, data concentrators and gateways, and communication equipment. Combined, the processing and networking capabilities enhance detection and feature recognition for security applications and industrial automation. For example, the MPU can acquire video from a 5Mpixel sensor at 30 frames per second (fps), perform analytics with the Edge AI accelerator, and send relevant video (encoding with an HW encoder) with detection metadata leveraging Gigabit Ethernet TSN, all in real-time streaming mode.

A 3D graphics processing unit (GPU) with 1080p resolution for graphics and video capabilities permits rich user interfaces, with support including Vulkan real-time graphics for Android applications. A1080p encoder/decoder and multiple display connections including LVDS, 4-lane MIPI DSI, and a MIPI CSI-2 camera interface simplify connecting displays and digital cameras including raw-Bayer image sensors.

State-of-the-art security features ensuring SESIP Level 3 certification include Arm's TrustZone® architecture and resource isolation framework (RIF). This is complemented with secure key storage, secure boot, a unique device ID in one-time programmable (OTP) memory, hardware cryptographic engines, and on-the-fly DDR encryption/decryption.

The devices are specified over the extended temperature range from -40°C to 125°C, easing thermal management and enhancing reliability in industrial environments. In addition, like other STM32 MPUs targeting industrial applications, the STM32MP2-series MPUs come with ST's 10-year longevity commitment.

A selection of package options is offered including a 0.8mm-pitch chip-scale package (TFBGA). This helps ease PCB design routing and allows economical designs down to four layers avoiding costly laser vias.

Developers using these new devices can leverage the extensive STM32MPU ecosystem, which contains the highly popular OpenSTLinux distribution that includes the complete AI framework (X-Linux-AI), as well as the STM32Cube development tools. The STM32Cube firmware will run bare metal or RTOS on the Cortex-M33 embedded core.

ST is now delivering samples of STM32MP25 devices along with evaluation boards to select OEM customers. Volume production of chips and boards is scheduled to begin in the first half of 2024. The company showcased its new STM32MP2 MPUs at the STM32 Summit event in Shenzhen, China on May 12-13.

For further information please go to www.st.com/stm32mp25

About STMicroelectronics

At ST, we are over 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 the Internet of Things and connectivity. We are committed to achieving our goal of becoming carbon neutral by 2027. Further information can be found at www.st.com.

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