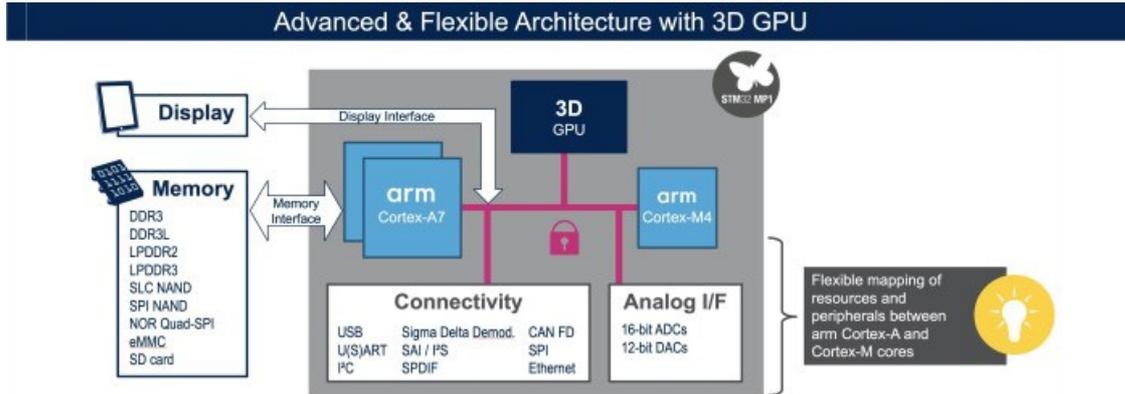


One of the two on-chip CAN FD modules supports TTCAN

The STM32MP1 by ST Microelectronics features multiple Cortex CPUs. An open-source Linux operating system is available.



The STM32MP1 addresses industrial, consumer, smart home, healthcare, and other non-automotive applications (Photo: ST Microelectronics)

The multi-core microprocessor comprises one or two Cortex-A7 cores and one Cortex-M4 core. The Cortex-M4 core is intended to run an RTOS (real-time operating system), while the Cortex-A7 cores are used for Linux applications. The multi-core chip embeds a 3D graphics processor unit, too. It also supports external DDR SDRAM and flash memories.

There are two on-chip CAN FD cores. One of them supports TTCAN as specified in ISO 11898-4. The CAN FD cores comply with ISO 11898-1:2015 (ISO CAN FD). Optionally, they run non-ISO CAN FD. The two interfaces share a 10-KiB memory, which provides a frame filter capability. The shared memory implements receive FIFOs (first-in, first-out), receive buffers, and transmit FIFOs. The common clock calibration unit is optional. It can be used to generate a calibrated clock for both CAN FD cores from the internal 64-MHz oscillator and the PLL, by evaluating CAN frames received by the FDCAN1 core. Moreover, the microprocessor integrates a set of peripherals that can be allocated either to Cortex-A (Linux) or Cortex-M (real-time) activities.

The embedded GPU enables HMI (human machine interface) applications based on the OpenGL ES 2.0 interface and native support for Linux and various application frameworks, including Android Qt. The STM32MP1 supports 24-bit parallel RGB displays up to WXGA at 60fps and MIPI DSI with two data lanes running at 1 Gbit/s.

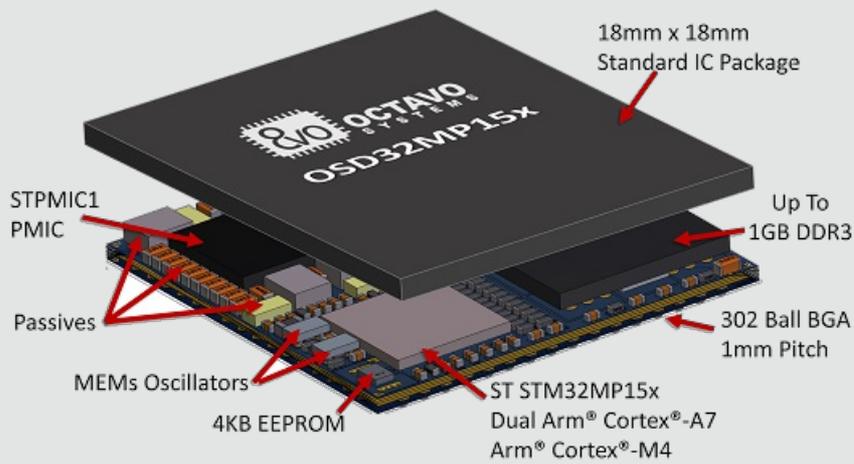
To accelerate development, the chipmaker is demonstrating its commitment to software development with the release of OpenSTLinux open-source distribution. This Linux implementation has already been reviewed and accepted by the Linux community: Linux Foundation, Yocto project, and Linaro. The deliveries contain the essential building blocks for running software on the application-processor cores. Enhanced STM32Cube tools, upgraded from the STM32Cube package for Cortex-M micro-controllers, simplify setting up projects and configuring the on-chip resources including the CAN FD interfaces. With this combination of a multi-core micro-controller and software, the chipmaker has assembled the pieces to match the product supply requirements of industrial applications. Of course, the chips are included in the company's rolling 10-year longevity commitment.



Besides evaluation boards, there are also Discovery kits with displays available (Photo: ST Microelectronics)

The products are available in a range of BGA packages to support the lowest PCB (printed-circuit board) cost structure and to require the smallest board space. Two evaluation boards (STM32MP157A-EV1 and STM32MP157C-EV1) and two Discovery kits (STM32MP157A-DK1 and STM32MP157C-DK2) are available through distributors channels in April.

ST has collaborated with Witekio for the Android porting to STM32MP1. "Witekio is proud to collaborate with STMicroelectronics for the Android porting on STM32MP1," said Yannick Chamings, Chairman of Witekio. "As a system software integrator, Witekio accompanies ST customers in their IoT innovative project by developing STM32MP1 series based full software systems from Linux or Android customization, to Qt HMI development and cloud connectivity."



The bar graph shows annual totals and line graph shows the 5-year moving average (Photo: Sipri)

System-in-Package based on the STM32MP1

Octavo (USA) presented on the ST Microelectronics stand at the Embedded World 2019 its OSD32MP15x System-in-Package (SiP) family. Based on ST's multi-core micro-controller the product features additional memory, USB transceivers, and other circuitries. The SiP integrates over 120 components, which simplifies the supply chain. Compared with discrete solutions, the chip is up to 64 percent smaller. The product comes in a 324-mm² enclosure. Several visitors requested to include transceivers for the CAN FD interfaces, said Greg Sheridan, Octavo's marketing manager. The company offers also SiPs based on TI's Sitara micro-controller featuring CAN connectivity.

To help customers accelerate development of secure Linux-based products, the chipmaker has worked with open-source software provider Timesys. "We are pleased to partner with STMicroelectronics for STM32MP1 series MPUs to provide the tools customers need to accelerate development of more secure Linux-based products," said Atul Bansal from Timesys. "The extensive STMicroelectronics investment in mainlining STM32MP1 series Yocto BSPs and integration of meta-timesys enables customers to reduce the amount of time spent managing vulnerabilities."

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