

## STM32MP23 MPU lines

# Cost-optimized 64-bit microprocessors with Neural Processing Unit



# Boost ML edge computing capabilities with the cost-optimized STM32MP23 for secure IoT applications

Like the STM32MP25, the STM32MP23 lines are built around single or dual Arm® Cortex®-A35 cores running up to 1.5 GHz and a single Arm® Cortex®-M33 core running up to 400 MHz.

The STM32MP23 lines are optimized for cost and performance, providing the same processing level as the previous MP2 without high-speed connectivity.

The STM32MP23 MPUs meet the demands of industrial applications, offering extended temperature tolerance up to 125°C.

### ADVANCED COMPUTE CAPABILITIES

Embedded neural network accelerator (0.6 TOPS) for advanced Al/ML for HMI/machine vision or predictive maintenance at the industrial and IoT edge

### ENHANCED MULTIMEDIA CAPABILITIES

- Multimedia capabilities for advanced HMI with 3D GPU (up to 1080p, including Vulkan support)
- H.264 HW video decoder and flexible display interfaces with RGB, MIPI DSI and LVDS (for high-quality video & versatile display options)
- MIPI CSI-2 camera interface with

image signal processor for raw Bayer camera sensor (enabling high-quality image processing & computer vision applications)

### STRONG SECURITY

- SESIP3 and PSA certified level 3 Target certifications
- TrustZone® on Cortex®-A and Cortex®-M
- Secure provisioning ecosystem
- Secure isolation for edge confidential computing thanks to resource isolation framework

# Extended ecosystem maintenance to meet industry and security challenges









### Strong STM32 ecosystem

With the fully mainlined OpenSTLinux distribution and the STM32Cube ecosystem, developing your next industrial design has never been easier. Users can now rely on STM32CubeMX, Multi-Core IDE solutions, and STM32CubeProgrammer to configure, develop, debug, and program their

MPUs. The STM32CubeMP2, part of the STM32Cube MPU Packages offer, provides BSP, HAL, middleware components, and application packages in source code for development. With the **OpenSTLinux Expansion** packages offer, users can enhance their MPU-based applications using graphics, real-time, and other features.

#### Extended maintenance

Our Linux distributions (Yocto - OpenSTLinux, Buildroot, OpenWRT, OpenSTDroid\*) maintenance is now extended from 2 to 5 years. This provides longer support for industrial customers, thus reducing maintenance costs. It will also help in being compliant with upcoming CRA (European Cyber Resilience Act)

regulations' needs during the whole product lifecycle.

10 years longevity program
Like all STM32 products, the
STM32MP23 is part of the 10year longevity program, providing
customers with confidence for new
product developments.

### ST Partner Program

Customers can trust on a strong collaboration with partners offering products and solutions to faster time-to-market with STM32 MPUs, especially system-on-modules and software solutions providers.

System Power supply regulator Crystal & Internal Cyclic Redundancy Check (CRC) Watchdogs (I & W) 96-bit unique ID Up to 144 GPIO: Security Resource isolation framework Octo-SPI OTF Decryption DRAM OTF Encryption/Dec DES, TDES, AES-256 SHA-256, SHA-3, HMAC T°, V, F and 32KHz detection Secure RTC Analog true RNG Audio SPDIF Rx 4 inputs 4x SAI MDF 4 channels / 4 filters Control 2x 16-bit advanced motor control timers 10x 16-bit GP timers 5x 16-bit low power time 1x 32-bit timers IC/OC/PWM

**Dual Arm®** Cortex®-A35 up to 1.5 GHz L1 32 Kbytes I/ 32 Kbytes D NEON SIMD MPE TrustZone® 512 Kbytes L2 cache Arm® Cortex®-M33 @400 MHz 16 Kbytes I-Cache FPU / MPU / NVIC DDR4/LPDDR4 32-bit @ 1.2 GHz DDR3(L) 32-bit @ 1066 MHz Shared RAM 640 Kbytes including 128 Kbytes Retention RAM Backup RAM 8 Kbytes Boot ROM 128 Kbytes OTP fuse 12 Kbytes Analog 3x 12-bit ADC 5 MSPS Temperature sensor

Connectivity 2x FDCAN / TT-FDCAN 3x SDI03.0 / SD 3 eMMC 5.1 16-bit SLC NAND, 8-bit-ECC 2x Octo SPI, 6x SPI 3x UART, 4x USART 2x 1Gbps ETH/TSN ports 1x USB 2.0 Host HS + PHY 1x USB 2.0 DRD HS + PHY USB Type-C connector support (UCPD) 4x I2C, 3x I3C, 3x I2S Multimedia / Al AI / NN HW Acceleration: up to 0.6 TOPS 3D GPU: OpenGL ES 3.2.8 Vulkan 1.3 / OpenCL 3.1 1080p60 H.264, VP8 Video 24b RGB Disp. 1080p @ 60fps LVDS Display 4 lanes with PHY Camera I/F MIPI CSI-2 2 lanes ISP (Camera Pineline) Camera I/F 16-bit Parallel

Hardware tools
A full set of evaluation boards
enables flexible prototyping



Discovery kit STM32MP257F-DK

To help you get started with the evaluation of the STM32MP23x product lines, you can rely on the STM32MP257F-DK Discovery kit and the applicable STM32 MPU embedded software, running with the STM32MP23 configuration (peripherals, features, and performance). It comes with a set of hardware accessories (camera, display...). These solutions enable faster time-to-market with STM32 MPUs.

Dedicated STPMIC25 for power management



### STM32MPU Wiki

Explore articles about the STM32MPU family and its associated ecosystems at: wiki.st.com/stm32mpu/

\*only available on STM32MP25x product lines



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