

STM32MP2 MPU series

64-bit microprocessors with Neural Processing Unit



Industrial-grade 64-bit MPU for secure Industry 4.0 and advanced edge computing applications that require high-end multimedia capabilities.

The STM32MP25 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.

STM32MP25 MPUs fit the requirements for industrial applications: 100% operating time for 10 years, extended temperature up to 125°C and a 10-year longevity program.

The STM32MP25 lines are designed for high connected applications: factory automation, smart homes or even smart city and infrastructure.

ADVANCED COMPUTE CAPABILITIES

- Enabling edge AI with the flexibility to run AI on CPU, GPU or NPU (up to 1.35 TOPS)
- Tailored for computer vision: anomaly detection, pose estimation, object detection, face and voice recognition or even traffic management

ENHANCED MULTIMEDIA CAPABILITIES

- Video processing unit
- 3D GPU supports up to 1080p resolution
- Full HD video pipe with LVDS and DSI interfaces
- MIPI CSI-2 interface with Lite-ISP

STRONG SECURITY

- SEIP3 and PSA certified level 1 Target certifications
- TrustZone® on Cortex®-A and Cortex®-M
- Secure provisioning ecosystem
- Secure isolation for edge confidential computing thanks to resource isolation framework

System	Dual Arm® Cortex®-A35 up to 1.5 GHz	Connectivity
Power supply regulator		2x 1Gbps ETH/TSN w/ switch
Crystal & Internal oscillators		3x CAN-FD / TTCAN
Cyclic Redundancy Check (CRC)		3x SDIO3.0 / SD 3 eMMC 5.1
Watchdogs (I & W)	L1 32 Kbytes I / 32 Kbytes D NEON SIMD MPÉ	16-bit SLC NAND, 8-bit-ECC
96-bit unique ID		2x Octo SPI, 8x SPI
Up to 172 GPIOs	TrustZone®	5x UART, 4x USART
		1Gbps ETH/TSN port
	512 Kbytes L2 cache	PCIe Gen2, 1 lane
		USB2.0 Host/Device HS or USB3.0 DRD
Security	Arm® Cortex®-M33 @400 MHz	USB2.0 Host HS + HS PHY
Resource isolation framework	16 Kbytes D-Cache	USB Type-C connector support
Octo-SPI OTF Decryption	16 Kbytes I-Cache	8x I²C, 4x I3C, 3x I²S
DRAM OTF Encryption/Dec	FPU / MPU / NVIC	
DES, TDES, AES-256 with SCA	TrustZone®	
SHA-256/512, SHA-3, HMAC		
PKA ECC/RSA		
16x Tamper pins		
T°, V, F and 32KHz detection	DDR4/LPDDR4 32-bit @ 1.2 GHz	
Secure RTC	DDR3(L) 32-bit @ 1066 MHz	
Analog true RNG	Shared RAM 640 Kbytes including 128 Kbytes Retention RAM	
Audio		
SPDIF Rx 4 inputs		
4x SAI		
MDF 8 channels / 8 filters		
Control	Backup RAM 8 Kbytes Boot ROM 128 Kbytes OTP fuse 12 Kbytes	
3x 16-bit motor control PWM synchronized AC timer		
10x 16-bit timers		
5x 16-bit LP timers	Analog	
4x 32-bit timers	3x 12-bit ADC 5 MSPS	
	Temperature sensor	

STM32MP25x supporting the growth of connected applications

Hardware interfaces

- TSN support (Time-sensitive networking)
- Up to 3 gigabit Ethernet ports (with 2-port switch)
- PCIe Gen2, USB 3.0, 3 x CAN-FD

Dedicated STPMIC25 for power management



Software tools

Embedded software distribution

Linux® distribution based on Yocto or Buildroot running on the Arm® Cortex®-A processor(s): OpenSTLinux Distribution.



Drivers, middleware & examples

STM32Cube MPU Package, provides BSP, HAL, middleware components and application packages in source code for development.



STM32Cube framework

Enhanced STM32CubeMX, Multi-Core IDE solutions (including STM32CubeIDE for device tree management) and STM32CubeProgrammer.

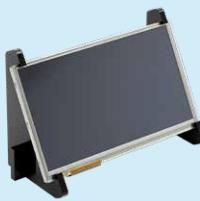


Hardware tools

A full set of evaluation boards enables flexible prototyping



Evaluation board
STM32MP257F-EV1



EDT LCD panel display



Camera module
adapter board
B-CAMS-IMX



DSI to HDMI
adapter board

© STMicroelectronics - May 2024 - Printed in the United Kingdom - All rights reserved
ST and the ST logo are registered and/or unregistered trademarks of STMicroelectronics International NV or its affiliates in the EU and/or elsewhere. In particular, ST and the ST logo are Registered in the US Patent and Trademark Office.

For additional information about ST trademarks, please refer to www.st.com/trademarks.
All other product or service names are the property of their respective owners.

