STM32MP1 Series

Microprocessors

Multicore STM32MP1 architecture is ideal for Open Source Linux based applications with real-time and power constrained subsystems

The STM32MP1 series embed a dual Arm® Cortex®-A7, Cortex®-M4 and a 3D GPU. This flexible architecture allows high processing and real-time tasks in a single chip. It comes with large packages offering lowest PCB cost structure and smallest board space.

STM32MP1 series is drastically reducing development time thanks to OpenSTLinux Distribution as a Mainlined Open Source Linux Distribution and STM32Cube Tools specially upgraded to cope with Linux MPU development.

TARGETED APPLICATIONS
- Industrial
- Home
- Consumer
- Health and Wellness

CORE
- Arm® Dual Cortex®-A7 up to @ 800 MHz
- Arm® Cortex®-M4 core @ 209 MHz

EXTERNAL MEMORIES SUPPORT
- DDR3, DDR3L, LPDDR2, LPDDR3
- SLC NAND, SPI NAND
- eMMC, SD card, Quad-SPI NOR

INTERNAL MEMORIES
- System RAM 256kB
- MCU RAM 484kB

ANALOG
- 2x 16-bit ADCs
- 2x 12-bit DACs

GRAPHICS
- 3D GPU OpenGL ES 2.0
- LCD-TFT Controller
- MIPI-DSI 2 lanes

SECURITY
- TrustZone
- AES 256, TDES
- SHA-256, MD5, HMAC
- Secure boot, RAMs & Peripherals

OTHER
- Up to 176 GPIOs
- Up to 125°C supported as maximum junction temperature

www.st.com/stm32mp1
**STM32MP157 Block diagram**

- **Arm® Dual Cortex®-A7** up to 800 MHz
  - L1 32kB I
  - L1 32kB D
  - 256kB L2 Cache

- **Arm® Cortex®-M4** 209 MHz

**External Memories**
- 3x SDMMC
- DDR3/DDR3L/LPDDR2/LPDDR3 32-bit @ 533 MHz
- Dual Quad-SPI
- 16-bit SLC NAND 8-bit ECC

**Internal Memories**
- System RAM 256kB
- MCU System RAM 36kB
- Back up RAM 4kB
- MCU Retention RAM 64kB
- OTP Fuse 3kB

**Connectivity**
- 10/100M or Gigabit Ethernet MAC
- 3x USB 2.0 Host/OTG with 2x HS PHY
- HDMI-CEC
- 2x CAN FD
- DFSDM (8 channels/6 filters)
- 6x SPI / 3x I2S
- 2x CAN FD
- 6x UART + 4x USART
- 4x SPI
- 3x USB 2.0 Host/OTG
- 2x MIPI-DSI

**Graphics**
- 3D GPU OpenGL ES 2.0 @ 533 MHz
- MIPI-DSI controller

**Security**
- TrustZone
- AES 256, TDES*
- SHA-256, MD5, HMAC
- 3x Tamper Pins with 1 active
- Secure Boot*
- Secure RAMs
- Secure Peripherals
- Secure RTC
- Analog true RNG
- 96-bit unique ID

**STM32MP1 Portfolio**

- **STM32MP157**
  - Dual Cortex-A7, Cortex-M4, 3D GPU, DSI, CAN FD
  - Features
  - Packages

- **STM32MP153**
  - Dual Cortex-A7, Cortex-M4, CAN FD

- **STM32MP151**
  - Cortex-A7, Cortex-M4

**STM32MP1 Embedded software distribution includes:**
- **Linux® distribution based on Yocto**, running on the Arm® Cortex®-A processor(s): **OpenSTLinux Distribution**
  - 2x 16-bit advanced motor control timers
  - 15x 16-bit timers
  - 32-bit timers

- **STM32Cube MPU Package**, running on the Arm® Cortex®-M processor: **STM32CubeMP1 Package**

**Hardware tools**
A full set of evaluation boards enables flexible prototyping as well as full STM32MP1 evaluation.

- **STM32MP157A-EV1**
- **STM32MP157C-EV1**
- 2 Evaluation boards

- **STM32MP157A-DK1**
- **STM32MP157C-DK2**
- 2 Discovery Kits

**Software tools**
STM32MP1 Series come with enhanced STM32CubeMX, Multi-Core IDE solutions (including STM32CubeIDE for device tree management) and STM32CubeProgrammer.

- **STM32CubeMP1**

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