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.

<table>
<thead>
<tr>
<th>TARGETED APPLICATIONS</th>
<th>ANALOG</th>
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<tbody>
<tr>
<td>Industrial</td>
<td>• 2x 16-bit ADCs</td>
</tr>
<tr>
<td>Home</td>
<td>• 2x 12-bit DACs</td>
</tr>
<tr>
<td>Consumer</td>
<td></td>
</tr>
<tr>
<td>Health and Wellness</td>
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<table>
<thead>
<tr>
<th>CORE</th>
<th>GRAPHICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Arm® Dual Cortex®-A7 up to</td>
<td>• 3D GPU OpenGL ES 2.0</td>
</tr>
<tr>
<td>800 MHz</td>
<td>• LCD-TFT Controller</td>
</tr>
<tr>
<td>• Arm® Cortex®-M4 core @ 209 MHz</td>
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<table>
<thead>
<tr>
<th>EXTERNAL MEMORIES SUPPORT</th>
<th>SECURITY</th>
</tr>
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<tbody>
<tr>
<td>• DDR3, DDR3L, LPDDR2, LPDDR3</td>
<td>• TrustZone</td>
</tr>
<tr>
<td>• SLC NAND, SPI NAND</td>
<td>• AES 256, TDES</td>
</tr>
<tr>
<td>• eMMC, SD card, Quad-SPI NOR</td>
<td>• SHA-256, MD5, HMAC</td>
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<table>
<thead>
<tr>
<th>INTERNAL MEMORIES</th>
<th>OTHER</th>
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<tbody>
<tr>
<td>• System RAM 256kB</td>
<td>• Up to 176 GPIOs</td>
</tr>
<tr>
<td>• MCU RAM 484kB</td>
<td>• Up to 125°C supported as maximum junction temperature</td>
</tr>
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</table>

www.st.com/stm32mp1
STM32MP157 Block diagram

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

Internal Memories
- MCU system RAM 364kB
- 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
- MIIO slave
- 16 SPI / 3x I²S
- 2x CAN FD
- DFSDM (8 channels/6 filters)
- 6x UART + 4x USART
- 4x SAI
- SPDIF
- 3x USB 2.0 Host/OTG with 2x HS PHY
- Camera interface
- MIIO slave
- DFSDM (8 channels/6 filters)
- 6x SPI / 3x I²S
- 2x CAN FD
- 4x UART + 4x USART
- 4x SAI
- SPDIF

Graphics
- 3D GPU Open GL ES 2.0 @ 533 MHz
- MIPI-DSI controller
- LVDS-FT controller

Security
- TrustZone
- AES 256, TDES
- SHA-256, MD5, HMAC
- Secure Boot
- Secure RAMs
- Secure Peripherals
- Secure RTC
- Analog true RNG
- 96-bit unique ID

System
- 5x LDOs
- Internal and External Oscillators
- MDMA + 2x DMA
- Reset and Clock
- 3x watchdogs
- Up to 176 GPIOs
- 2x 16-bit advanced motor control timers
- 15x 16-bit timers
- 2x 32-bit timers
- 2x 16-bit ADCs
- 2x 12-bit DACs

STM32MP151* Dual Cortex-A7, Cortex-M4
STM32MP153* Dual Cortex-A7, Cortex-M4, CAN FD
STM32MP157* Dual Cortex-A7, Cortex-M4, 3D GPU, DSI, CAN FD

Packages can support low-cost PCB down to 4-layers PTH

STM32MP1 Embedded software distribution includes:

- Linux® distribution based on Yocto, running on the Arm® Cortex®-A processor(s): OpenSTLinux Distribution
- STM32Cube MPU Package, running on the Arm® Cortex®-M processor: STM32CubeMP1 Package

STM32CubeMP1 Portfolio

<table>
<thead>
<tr>
<th>Features</th>
<th>Packages</th>
<th>size</th>
</tr>
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<tbody>
<tr>
<td>STM32MP157* Dual Cortex-A7, Cortex-M4</td>
<td>TFBGA 257</td>
<td>10x10mm</td>
</tr>
<tr>
<td>STM32MP153* Dual Cortex-A7, Cortex-M4, CAN FD</td>
<td>TFBGA 361</td>
<td>12x12mm</td>
</tr>
<tr>
<td>STM32MP157* Cortex-A7, Cortex-M4</td>
<td>LFBGA 354</td>
<td>16x16mm</td>
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<td></td>
<td>LFBGA 448</td>
<td>18x18mm</td>
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*With or without crypto and secure boot

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

STM32MP157A-EV1
STM32MP157F-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.

Flash this code to access to our wiki!
https://wiki.st.com/stm32mpu

STM32 MPU wiki by STT