STM32L5 Series
Excellence in ultra-low power with more security

First STM32 MCU based on Arm® Cortex®-M33 and TrustZone® technology

The STM32L5 series is the answer for embedded applications requiring more security and a lower power consumption. It adds more security with Arm® Cortex®-M33 and its TrustZone® technology as well as ST’s security implementation while using our best-in-class ultra-low power technology.

Offering up to 512 Kbytes of Flash (dual bank) memory and 256 Kbytes of SRAM, the STM32L5 reaches an upgraded level of performance (442 CoreMark) thanks to this new core and a new ART Accelerator™ (now supporting also external memory).

The STM32L5 offers a large portfolio with 7 packages (from 48 to 144 pins) and supports up to 125°C ambient temperature.

POWER CONSUMPTION
- EEMBC ULPBench®: 370 ULPMark-CP score
- Embedded SMPS step-down converter (optional)
- Best power consumption with full flexibility:
  - 17 nA in shutdown mode
  - 3 µA in stop mode with full SRAM and peripheral state retention and with 5 µs wake-up time
  - Down to 62 µA/MHz in active mode

A FULL SET OF SECURITY FEATURES
- Flexible hardware and software secure isolations with TrustZone®
- Enhanced security services:
  - Dedicated secure user memory space for secure boot and root of trust
  - Symmetric and asymmetric crypto accelerations
  - Memory and IP protection
  - Independent read-out protection between secure / non secure domains
- Active IO tamper detection
- Cryptographic firmware library
- Secure Firmware Install to protect code and control the number of products manufactured

INTEGRATION, SIZE, PERFORMANCE
- Better application responsiveness:
  - New Arm® Cortex®-M33 at 110 MHz
  - Performance: +20% versus Cortex®-M4
  - New ART Accelerator™: working both on internal and external Flash memory (8 Kbytes of instruction cache)
  - Achieving 165 DMIPS, 442 CoreMark scores and 370 ULPMark-CP
- High integration and innovation: large memory, USB Type-C™ with Power Delivery controller, CAN FD
- Large portfolio: 7 types of packages for several options

www.st.com/stm32l5
### STM32L562 BLOCK DIAGRAM

- **FSMC 8-/16-bit (TFT-LCD, SRAM, NOR, NAND)**
- **2x SAI, DFSDM (4 channels)**
- **14 timers including:**
  - 2x 16-bit advanced motor control timers
  - 2x LPUART timers
  - 3x 16-bit-timers
  - 2x 32-bit timers
- **Up to 256-Kbyte RAM**
- **Up to 512-Kbyte Flash memory**
- **Dual Bank**
- **ART Accelerator™**
- **DMA**
- **AES (256-bit), PKA, SHA-1, SHA-256, TRNG, CRC, OTFDEC**
- **1x temperature sensor**

### Connectivity
- **USB Device Crystal-less, USB Type-C and PD,**
- **1x SD/SDIO/MMC, 3x SPI,**
- **4x I²C, 1x CAN FD,**
- **1x Octo-SPI,**
- **5x USART + 1x LPUART**

### Digital
- **2x SAI, DFSDM (4 channels)**

### Analog
- **2x 12-bit ADC 12/16 bits**
- **5 MSPS, 2x DAC,**
- **2x comparators, 2x op amps**
- **1x temperature sensor**

### Timers
- **14 timers including:**
  - 2x 16-bit advanced motor control timers
  - 2x LPUART timers
  - 3x 16-bit-timers
  - 2x 32-bit timers

### I/Os
- **Up to 115 I/Os Touch-sensing controller**

### STM32CUBE ECOSYSTEM

Full set of software tools including STM32CubeMX to configure, generate code, calculate power consumption; STM32CubeIDE to configure, develop, compile and debug; STM32CubeProgrammer to program internal or external memories through JTAG or bootloader interfaces; and STM32CubeMonitor-Power to display power consumption.

One-stop-shop STM32Cube embedded software package with user-friendly license terms including MCU drivers, middleware (USB, TLS, Crypto, touch sensing, file system, TF-M and RTOS), project examples for IAR, Keil and STM32CubeIDE IDEs. TF-M is an open-source reference code to implement a Trusted Execution Environment (TEE) as specified in Arm PSA.

### STM32L5 PORTFOLIO

<table>
<thead>
<tr>
<th>Flash memory size / RAM size (bytes)</th>
<th>STM32L562CE</th>
<th>STM32L562RE</th>
<th>STM32L562ME</th>
<th>STM32L562VE</th>
<th>STM32L562QE</th>
<th>STM32L562ZE</th>
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</thead>
<tbody>
<tr>
<td>512 K / 256 K</td>
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<td>256 K / 256 K</td>
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</table>

Legend:  
- [ ] without HW crypto  
- [ ] with HW crypto

### HARDWARE TOOLS

- **Evaluation board**
  - Full feature development platform
  - [STM32L552E-EV](https://www.st.com/stm32l552e-ev)

- **Discovery kit**
  - Flexible prototyping with on-board Energy meter
  - [STM32L562E-DK](https://www.st.com/stm32l562e-dk)

- **STM32 Nucleo-144 development board**
  - An affordable and flexible way to try out new concepts
  - [NUCLEO-L552ZE-Q (SMPS version)](https://www.st.com/nucléo-l552ze-q-smps)

### ST COMMUNITY

- [community.st.com/stm32](https://community.st.com/stm32)

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