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

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 states retention and with 5 µs wake-up time

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
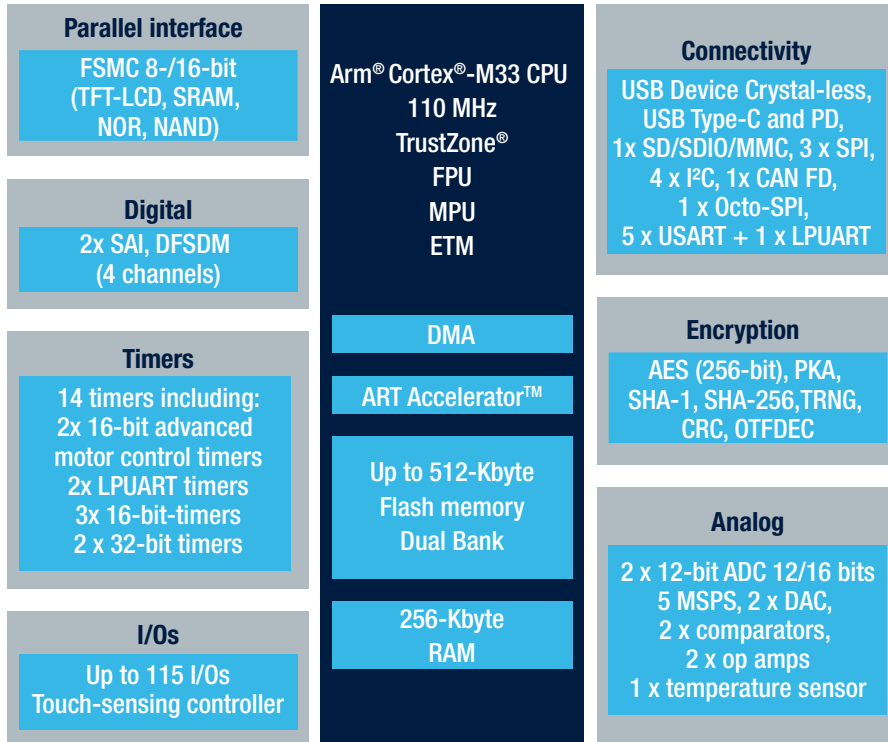 - Symmetric and asymmetric crypto accelerations
- Memory and IP protection
- Independent read-out protection between secure / non secure domains
- Active IO tamper detection
- Cryptographic firmware library
- Secure Firmware Install to protect code and control the number of products manufactured

INTEGRATION, SIZE, PERFORMANCE
- Better application responsiveness:
  - Performance: +20% versus Cortex®-M4
  - New ART Accelerator™: now supporting also external memory
- 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

www.st.com/stm32l5

STM32L562 block diagram

Parallel interface
FSMC 8-/16-bit
(TFT-LCD, SRAM,
NOR, NAND)

Digital
2x SAI, DFSDM
(4 channels)

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

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

Arm® Cortex®-M33 CPU
110 MHz
TrustZone®
FPU
MPU
ETM

DMA

ART Accelerator™

Up to 512-Kbyte
Flash memory
Dual Bank

256-Kbyte
RAM

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

Encryption
AES (256-bit), PKA,
SHA-1, SHA-256,TRNG,
CRC, OTFDEC

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

Hardware tools

Evaluation board
Full feature development plaform

STM32L552E-EV

Discovery kit
Flexible prototyping with on-board
Energy meter

STM32L562E-DK

STM32 Nucleo-144 development board
An affordable and flexible way to try out
new concepts

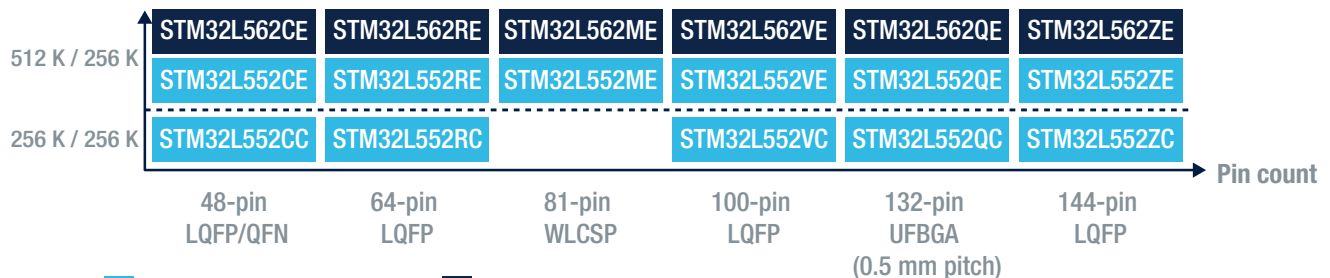NUCLEO-L552ZE-Q (SMPS version)

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.

The STM32Trust ecosystem combines knowledge, design tools, and ready-to-use original ST software to build strong cyber-protection into new IoT devices, leveraging industry best-practices.
www.st.com/stm32trust

STM32L5 Portfolio

Flash memory size / RAM size (bytes)

	48-pin LQFP/QFN	64-pin LQFP	81-pin WLCSP	100-pin LQFP	132-pin UFBGA (0.5 mm pitch)	144-pin LQFP
512 K / 256 K	STM32L562CE	STM32L562RE	STM32L562ME	STM32L562VE	STM32L562QE	STM32L562ZE
	STM32L552CE	STM32L552RE	STM32L552ME	STM32L552VE	STM32L552QE	STM32L552ZE
256 K / 256 K	STM32L552CC	STM32L552RC		STM32L552VC	STM32L552QC	STM32L552ZC

→ Pin count

Legend: ▮ without HW crypto   ▮ with HW crypto

STM32L5 ON-LINE TRAINING
www.st.com/stm32l5-online-training

ST COMMUNITY
community.st.com/stm32

life.augmented

Order code: FLSTM32L50420

For more information on ST products and solutions, visit www.st.com/stm32l5