STM32U3 Series

Best-in-class low-power consumption with robust security

Extend battery life and protect data in cost-sensitive industrial, medical, and consumer devices

This new STM32U3 series of microcontrollers offers best-in-class low-power consumption and robust security features, all within a cost-effective design.

It is based on an Arm® Cortex®-M33 core, running at 96 MHz, and offers many package options, from 32 to 100 pins, including LQFP, UFBGA, QFN, and WLCSP.

It provides 256 Kbytes of RAM and up to 1 Mbyte of flash dual bank for flexible memory operations.

KEY FEATURES

- First STM32 with near-threshold design
- Best-in class power consumption:
  - down to 10µA/MHz
  - down to 200 nA in shutdown mode
  - down to 1.6 µA in stop mode
- Robust security to safeguard sensitive and mission-critical applications
- Essential peripherals: I3C and FDCAN IP
- Simple PCB design capabilities
- User-friendly development enabled by the STM32Cube ecosystem
- Wide temperature support (-40°C / +85°C and +105°C).

KEY APPLICATIONS

- Increases battery lifetime in **activity tracking** devices by a factor of 7 compared with previous generation
- Decreases battery size by a factor of 4 in **gas and water metering** devices compared with previous generation (enabling the development of smaller devices that can be placed in more low-access locations)
- Doubles the efficiency of **industrial GPS tracking** devices compared with previous generation

www.st.com/stm32u3

Timers

- 1x 16-bit advanced motor control timers
- 4x ULP timers
- 5x 16-bit timers
- 3x 32-bit timers

I/Os

- Touch sensing controller

Analog

- 2x 12-bit ADC 2.5 MPSPS
- 2x DAC
- 2x comparators
- 2x op amps
- 1x temperature sensor

Arm® Cortex®-M33
96 MHz FPU
MPU
TrustZone®
ETM

ART Accelerator™

Up to 1MB Flash Dual Bank

256KB RAM

Connectivity

- USB FS Host/Device
- 1x SD/SDIO/MMC*
- 3x SPI
- 3x I2C + 2x I3C
- 1x FDCAN
- 1x OCTOSPI
- 2x USART + 1x ULP UART
- 1x SAI
- 1x Audio digital filter (ADF)

Security

- Coupling and chaining bridge
- Attestation keys
- SAES + AES (256-bit)
- SHA-1, SHA-256
- HASH, TRNG
- Public key accelerator (PKA)
- Secure key storage (HUK)

NEW SECURITY MECHANISMS ON STM32

Coupling and chaining bridge HAL: provides key hardware protection, ensuring private keys remain inaccessible to the CPU and are securely derived and stored.

In-factory provisioned identity: assigns a unique, secure identity to a device during manufacturing, ensuring product authenticity throughout its lifecycle.

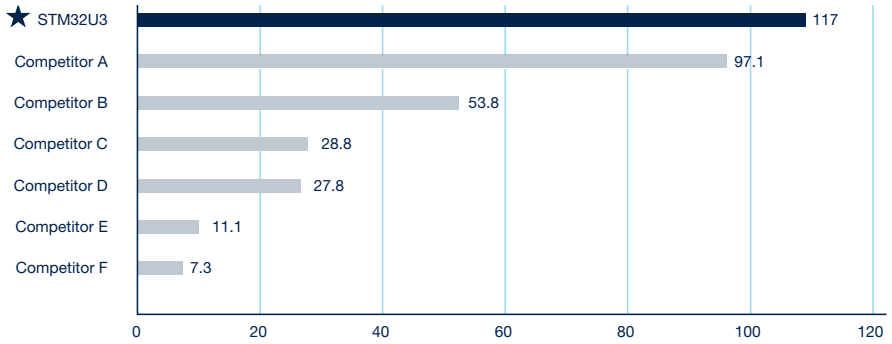
Global Platform SESIP 3

psacertified level three

The first STM32 based on near-threshold design

Near-threshold design is a cutting-edge technique used to drastically reduce dynamic power consumption in microcontrollers. The STM32U3 is the first STM32 microcontroller to implement this innovative design, achieving market-leading efficiency with 117 Coremark/mW, making it 5 times more efficient than previous generations. It also supports a wide temperature range of -40°C to +105°C, making it ideal for industrial applications.

CoreMark/mW* (the higher the better)



*CoreMark/mW is a relevant metric to compare different cores and different voltage ranges

Order code: FL2503STM32U3