



life.augmented

STM32U0 series

The latest generation of entry-level
ultra-low-power MCUs





The STM32 portfolio

Five product categories



Wireless
MCU

Short- and long-range connectivity



Ultra-low-power
MCU


32-bit general-purpose microcontrollers: from 75 to 3,224 CoreMark score



Mainstream
MCU



High-performance
MCU



Embedded
MPU

32- and 64-bit microprocessors



Enabling edge AI solutions



Scalable security



[MPU portfolio](#)
[MCU portfolio](#)



What the STM32U0 series offers

**The ideal combination
between energy
consumption, features,
and cost.**

**Enabling more design
freedom in entry-level,
battery-operated devices.**

Energy savings & longer product usage

- Best-in-class static consumption.
- Many ultra-low-power modes for greater flexibility.

Integrated features

- High integration, incl. LCD driver, MSI internal oscillator, ART Accelerator, security, and more.

Cost effectiveness

- Lower BOM costs thanks to high integration.
- Attractive price point.
- Building on the proven STM32 ULP series for a faster time to market.

Designed for battery-powered applications



Industrial

Thermostats, smoke detectors,
heat cost allocators, door locks

Medical

Insulin pumps, glucose
meters



Smart metering

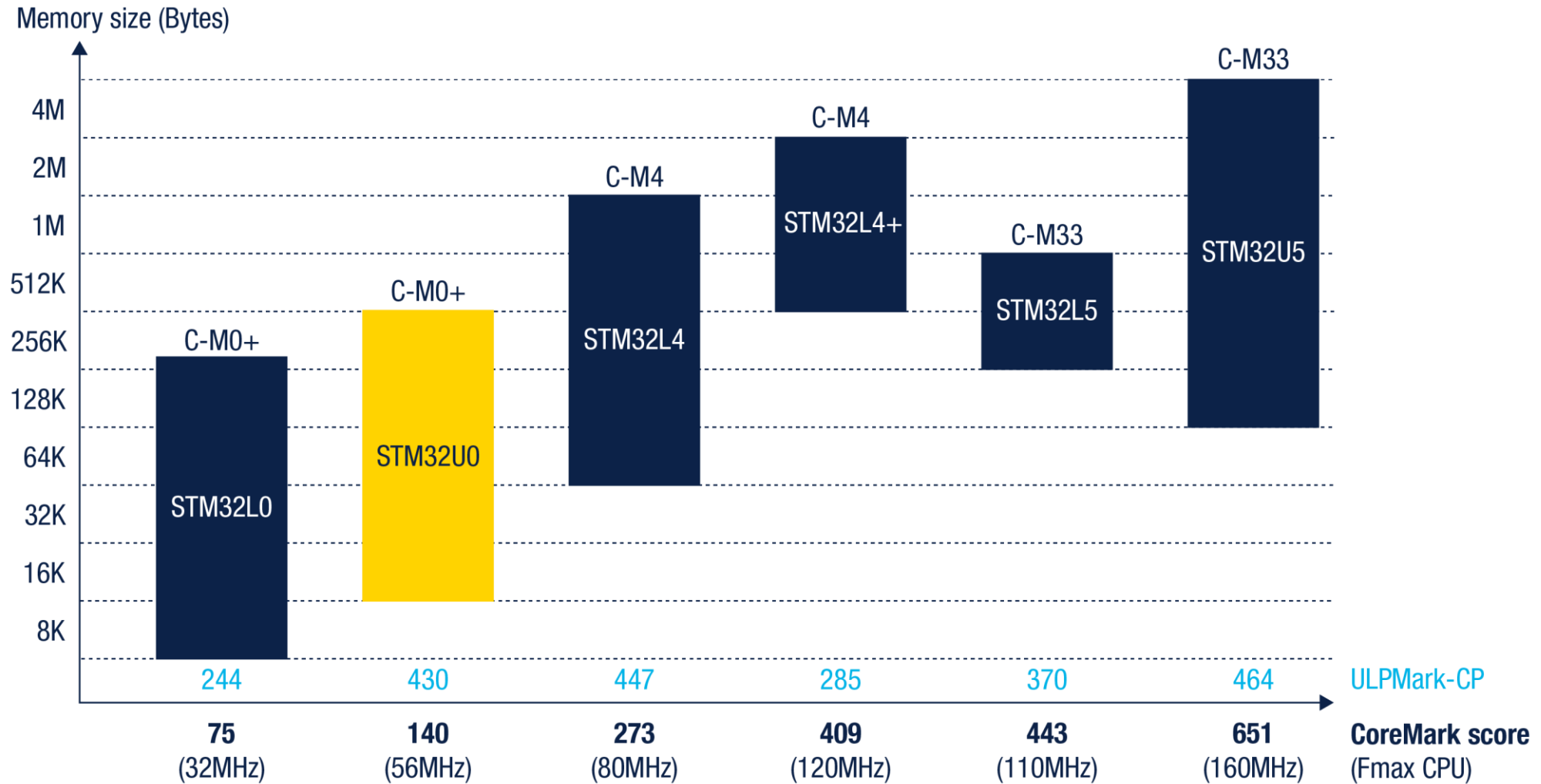
Water, gas, electricity
meters, smart home
gateways

Consumer

Activity trackers, GPS,
headphones



STM32U0: the latest generation of entry-level, ultra-low-power MCU



STM32U0 contributes to a more sustainable approach

By reducing power consumption in end devices, STM32U0 contributes to reducing their carbon footprint.



Energy savings

STM32U0 requires less energy than previous product generations.



Longer product lifetime

Expanding battery usage. Enabling batteries to last up to twice as long depending on the application.



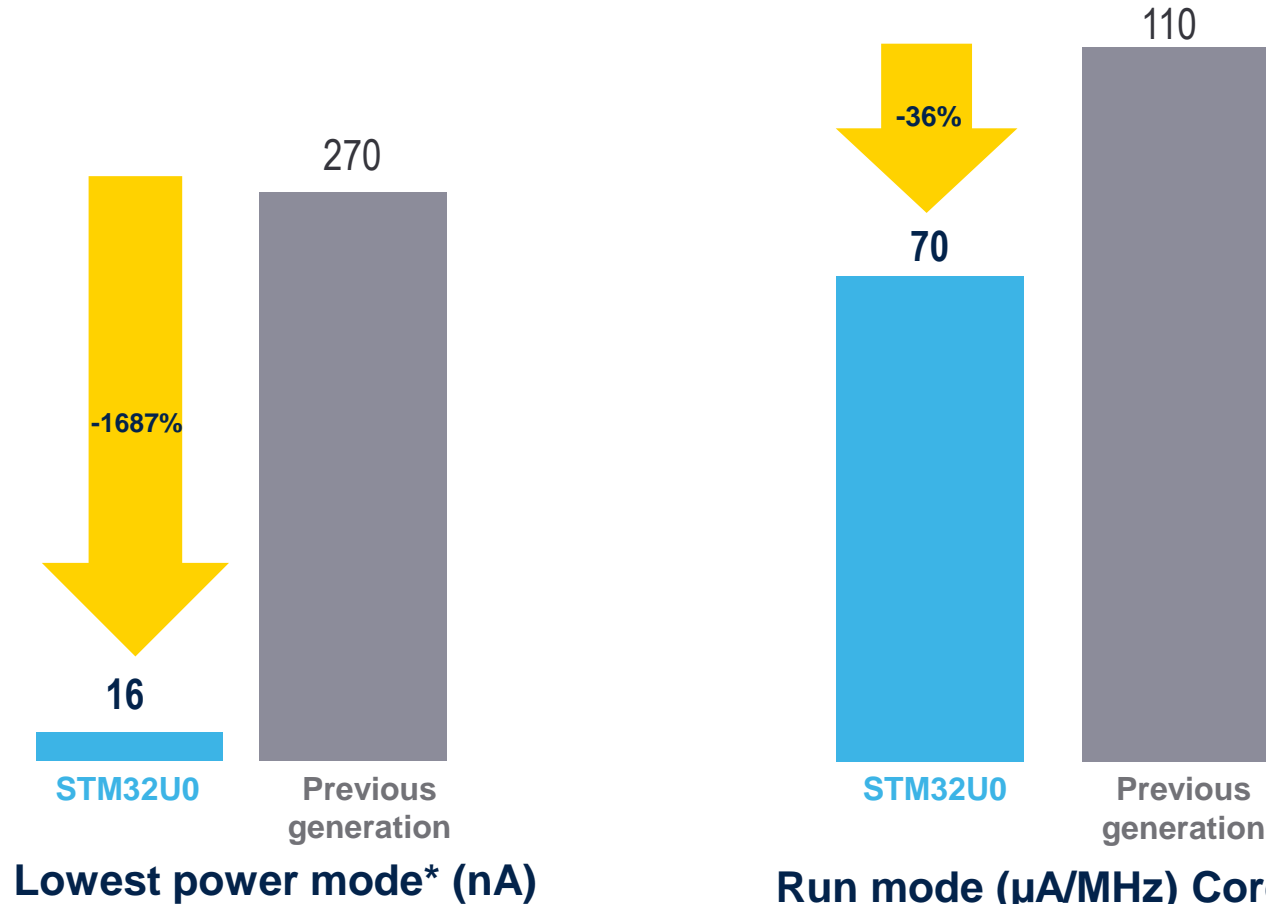
**SUSTAINABLE
TECHNOLOGY**

[Find out more](#)

STM32U0 is labeled Sustainable Technology

It was designed in an eco-friendly way and contributes to making applications more sustainable. For more information on responsible products, [visit st.com](https://www.st.com)

STM32U0 reduces power consumption compared to previous product generations



STATIC PRODUCT CONSUMPTION

DYNAMIC PRODUCT CONSUMPTION

Up to 50% energy savings versus previous product generation

- Water metering: 38%
- Industrial sensors: 50%

*shutdown mode

STM32U0 efficiency proven by benchmarks

Excellent ultra-low-power performance for an entry-level MCU

ULPBENCH™
An EEMBC Benchmark

430 ULPMark-CP

True energy cost of deep-sleep modes

ULPBENCH™
An EEMBC Benchmark

167 ULPMark-PP

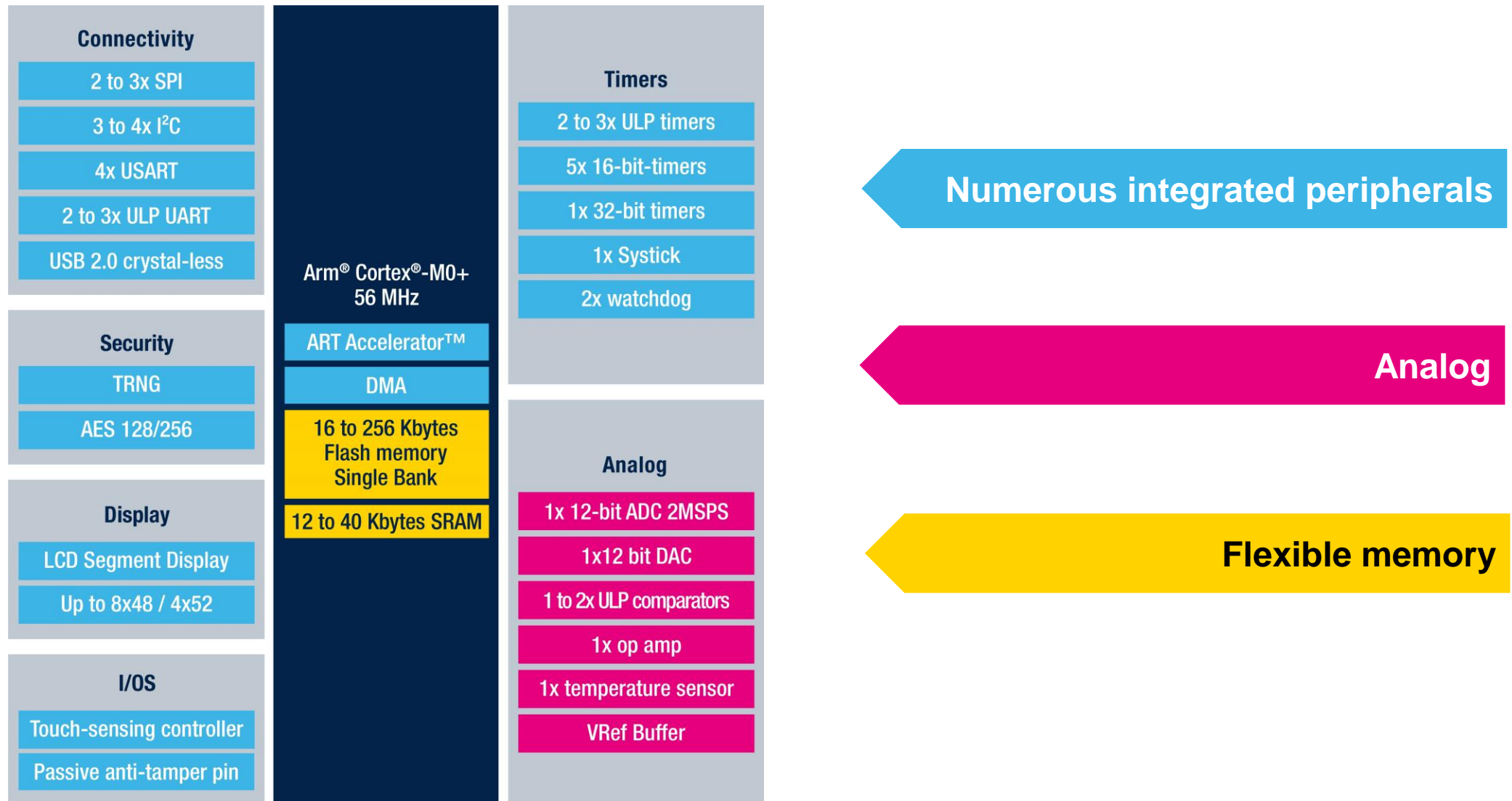
Common peripherals' energy impact on deep-sleep

ULPBENCH™
An EEMBC Benchmark

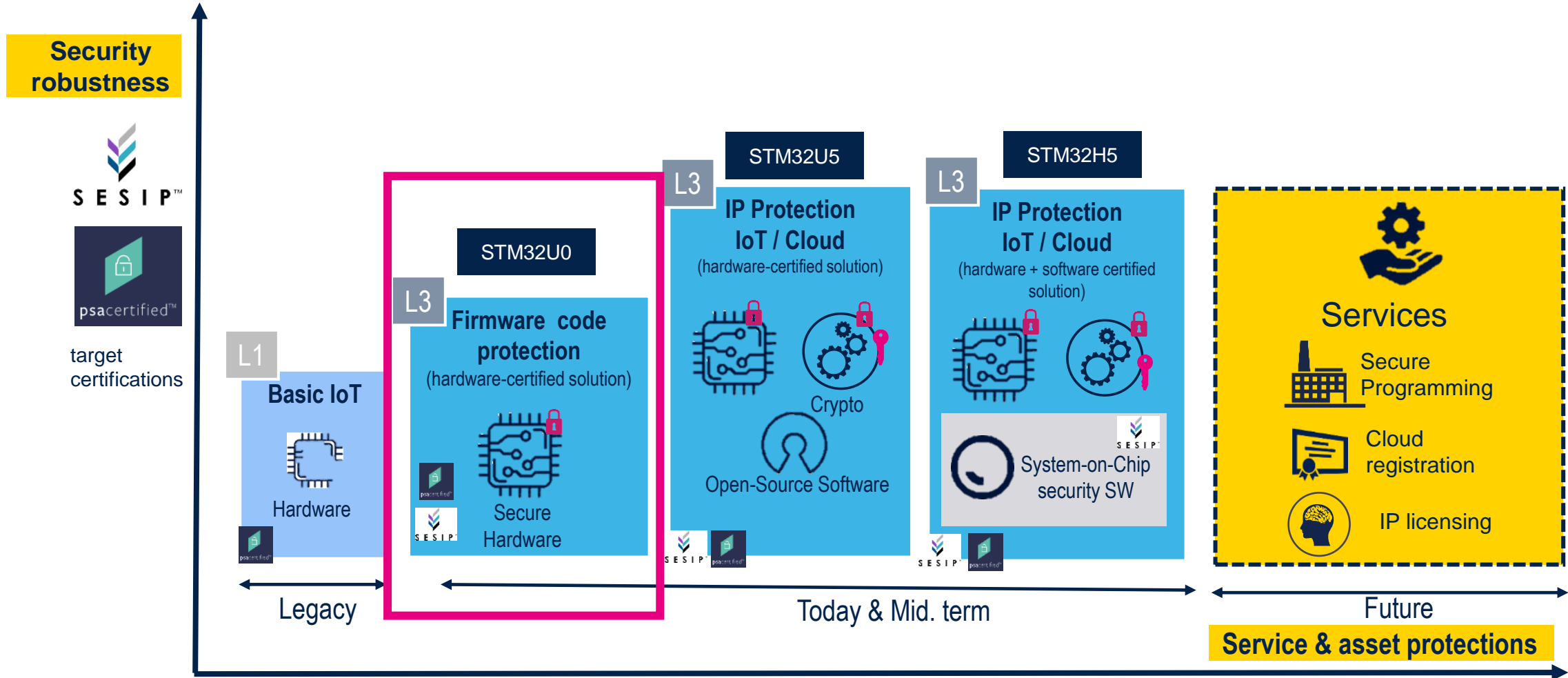
20 ULPMark-CM

Active power, using CoreMark as the workload

STM32U0 offers high integration for lower BOM costs



Security target: firmware code protection



STM32U0 security for protecting your assets

First MCU running on an Arm® Cortex®-M0+ targeting SESIP Level 3, PSA-Certified Level 1, and NIST certifications

Memory protections against illegal access control

- OTP, HDP, WRP, RDP, MPU
- RDP: 3 protection level states
- Password-based regression (128-bit PSWD)
- Secure boot

Cryptographic accelerator for hardware robustness

- AES: 128/256-bit key encryption hardware acceleration
- True random number generator (NIST SP800-90B)



STM32U0 helps cuts down costs

Lower BOM costs

High integration

- Segment LCD controller
- Many analog peripherals: DAC/ ADC - OPAMP – ULP comparator
- No crystal required for USB and high-speed clock source
- ULP timers input capture in stop mode
- VBAT battery charging
- Touch controller

Proven technology for faster time to market

Leveraging several features already embedded in STM32L0, STM32L4, and STM32U5. Pin-to-pin compatibility with STM32L0, STM32L4 series.

Attractive price point

Starting at \$0.68 for 1,000 units.

Many options available to streamline costs



10 different packages

TSSOP 20 pins
 UFQFPN 32 pins
 LQFP 48 pins
 LQFP 64 pins
 UFQFPN 48 pins

UFBGA 64 pins
 WLCSP 27 and 42 pins
 LQFP 80 pins
 UFBGA 81 pins

Product lines	FLASH (KB)	RAM (KB)	LCD Segment Display Controller 8x48/ 4x52	USB 2.0 crystal-less device mode	ULP Comparators	ULP timers with input capture	ULP UART	AES 128/256
STM32U031	16 to 64	12			1	2	1	
STM32U073	64 to 256	40	•	•	2	3	2	
STM32U083	256	40	•	•	2	3	2	•



Accelerate your development with a full ecosystem



Tools and software supporting you during all your design steps

Evaluation,
prototyping
and selection

Hardware and
software
configuration

Application development and debug

Code and hardware
options
programming

Run-time
application
monitoring

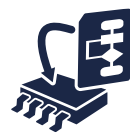


STM32
Finder

STM32
boards



STM32
CubeMX



STM32
CubeMCU Packages



STM32
CubeExpansion
&
Verticals and
partner solutions



STM32
CubeIDE
&
Partner IDEs



STM32
CubeProgrammer
&
Programmers from partners

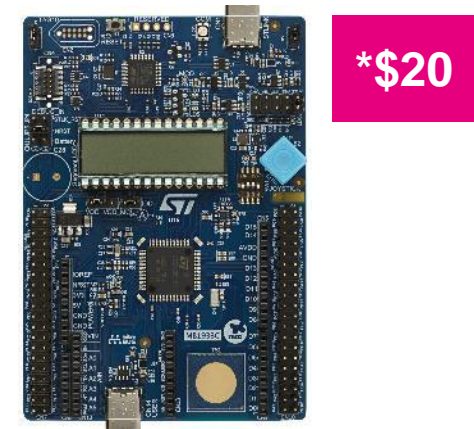
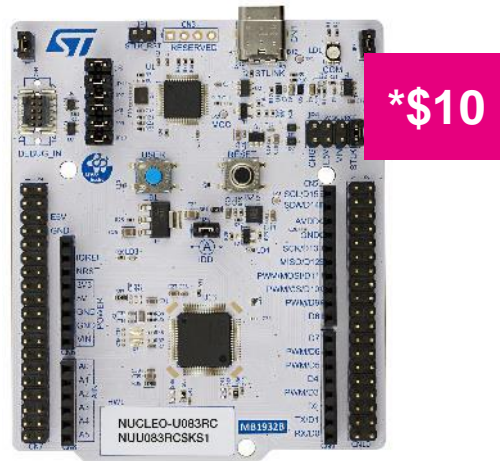
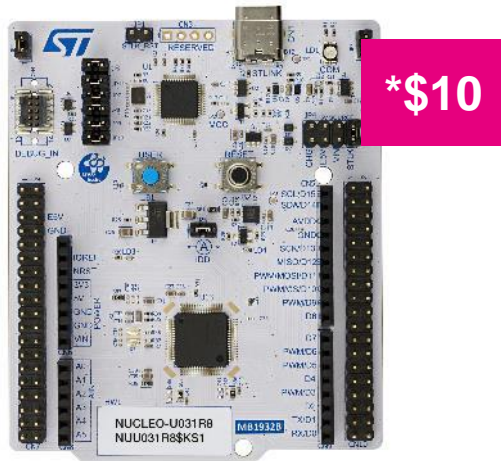


STM32
CubeMonitor

Worldwide support channels

Development tools for the STM32U0 series

Speed-up evaluation, prototyping, and design



Highly affordable
NUCLEO-U031R8 & NUCLEO-U083RC

64K Flash with LQFP64 package

256K Flash with LQFP package

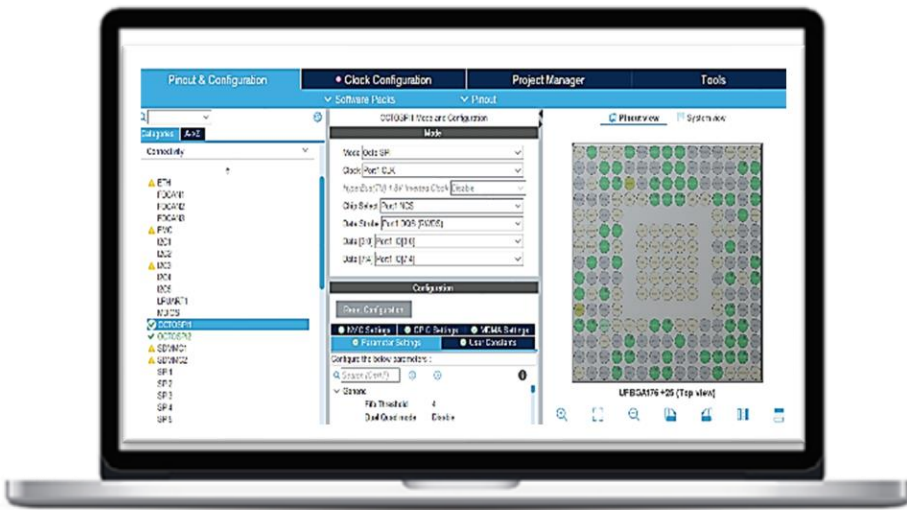
Discovery kit
STM32U083C-DK

256 Kbytes of Flash in LQFP80

Enabling ultra-low-power designs
and typical use cases

STM32CubeMX, a GUI-based code generation tool

Accelerate and simplify your development



Move from idea to implementation in no time.

Use a pre-configured project template for STM32U0 Nucleo board including BSP and ready-to-use services.

Develop faster. Achieve more.

- Set up your pinout and clock
- Configure all the MCU features
- Generate ready-to-use code for your preferred IDE

User-friendly energy profiler Compatible with STM32U0 series

Debug code and measure energy consumption at the same time

STLINK-V3PWR



STM32
CubeMonitor-Power



Visualize energy consumption with
STM32CubeMonPwr software tool

Current measurement with wide dynamic range
(a few nA-500 mA)

High accuracy (down to +/-0.5 %)
Resolution down to 1.5 nA

Programmable output voltage source
1.6 - 3.6 V (up to 2 A)

Direct support of Keil and IAR IDEs
for power profiling

Programmer with multi-path bridge

Releasing your creativity



[/STM32](#)



[@ST_World](#)



[community.st.com](#)



[www.st.com/STM32U0](#)



[wiki.st.com/stm32mcu](#)



[github.com/stm32-hotspot](#)



[STM32 MCU Developer Zone](#)



Our technology starts with You



Find out more at www.st.com/STM32U0

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