



Releasing your creativity

Discover the STM32 family of
microcontrollers & microprocessors





STM32: a developer-first strategy since 2007



STM32 is a key enabler: empowering embedded developers around the world to release their creativity.

We provide embedded developers with cutting-edge hardware and software technology, comprehensive support, and high-quality, reliable supply. This helps them build designs that are smarter, more connected, and more secure.



**The first choice for
32-bit MCU developers**

Source: Aspencore embedded survey, 2022



Source: OMDIA CLT, 2022, 2023

100,000+ customers

Our technology starts with You

Supporting developers' needs



More wireless connectivity



More advanced security



More autonomous decisions embedding AI



More application specific added value IP

More wired connectivity

Lower power

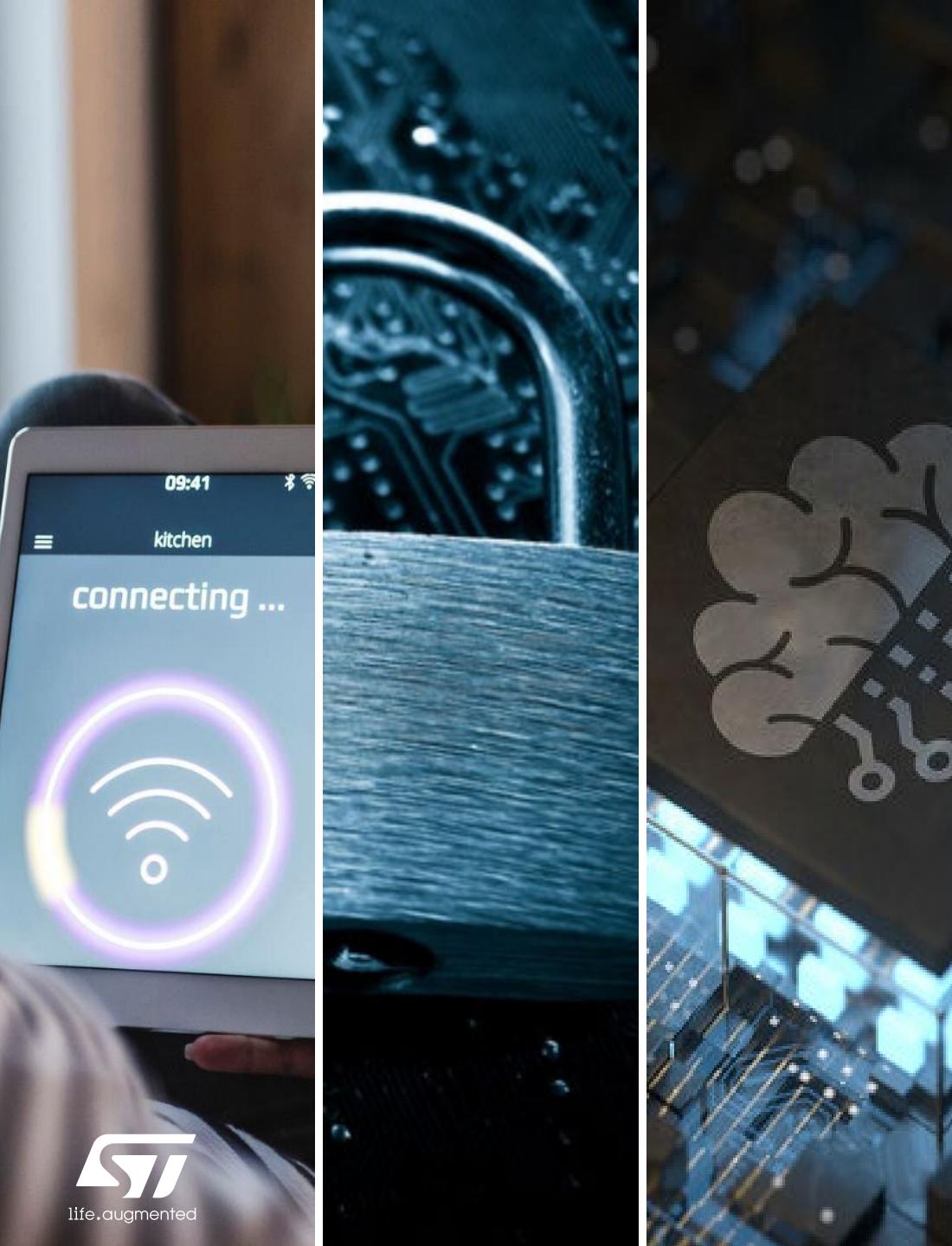


More computing power
32-bit CPU
Arm® Cortex®-based
Real-time OS
(up to two cores)

Flexible memory interfaces

More embedded flash

Optional





What the STM32 family offers

Real-time performance

- Powerful Cortex® cores
- Multicore performance
- Fast interfaces
- Hardware accelerators



Outstanding power efficiency

- Ultra-low dynamic power consumption
- Long lifetime, small battery
- Sustainable technology



Advanced, innovative peripherals

- Graphic acceleration
- Digital & analog peripherals
- USB Type-C®
- Peripherals for wireless and edge AI solutions



Optimized integration

- Best fit for application requirements (package size, cost, performance)
- Safety & security features



Extensive ecosystem

- Comprehensive development tools
- Wide range of partners
- Community support



4,000+ commercial part numbers



Rolling 10-year longevity commitment for continuous supply

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 3,360 CoreMark score



Mainstream
MCU



High-performance
MCU



Embedded
MPU

32- and 64-bit microprocessors



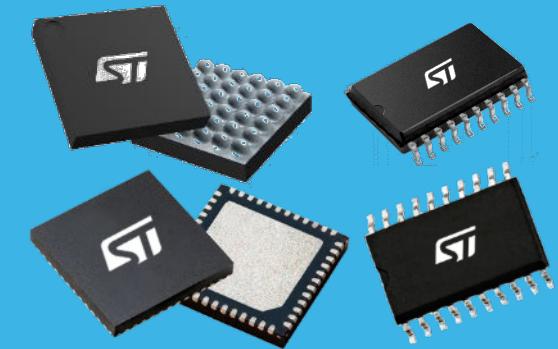
Enabling edge AI solutions



Scalable security



Addressing entry-level to high-performance applications



**90+ package types
from 5 to 784 mm²**



20- to 68-pin QFN
18- to 208-pin WLCSP
20-pin TSSOP
8-pin SO
32- to 208-pin LQFP
64- to 264-pin BGA



Multiple memory options

From 8 Kbytes to 4 Mbytes flash memory
From 2 Kbytes to 4 Mbytes RAM

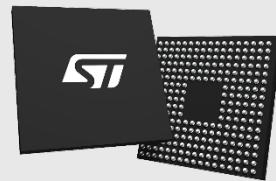
STM32C0

8 pins
16 Kbytes of flash
memory
48 MHz

XXS



XXL



STM32N6

264 pins
4 Mbytes of RAM
800 MHz



STM32 portfolio



MPU



High-performance MCUs



Mainstream MCUs



STM32C0
114 CoreMark
48 MHz Cortex M0+

STM32F0
106 CoreMark
48 MHz Cortex-M0

STM32G0
142 CoreMark
64 MHz Cortex-M0+

STM32F1
177 CoreMark
72 MHz Cortex-M3

STM32F3
245 CoreMark
72 MHz Cortex-M4

STM32G4
569 CoreMark
170 MHz Cortex-M4

Mixed-signal MCUs



STM32WL
162 CoreMark
48 MHz Cortex-M4
48 MHz Cortex-M0+

STM32WB0
64 MHz Cortex-M0+

STM32WB
216 CoreMark
64 MHz Cortex-M4
32 MHz Cortex-M0+

STM32WBA
407 CoreMark
100 MHz Cortex-M33

Latest product generation

Radio coprocessor only

New series or lines introduced in 2024

STM32 high-performance MCUs

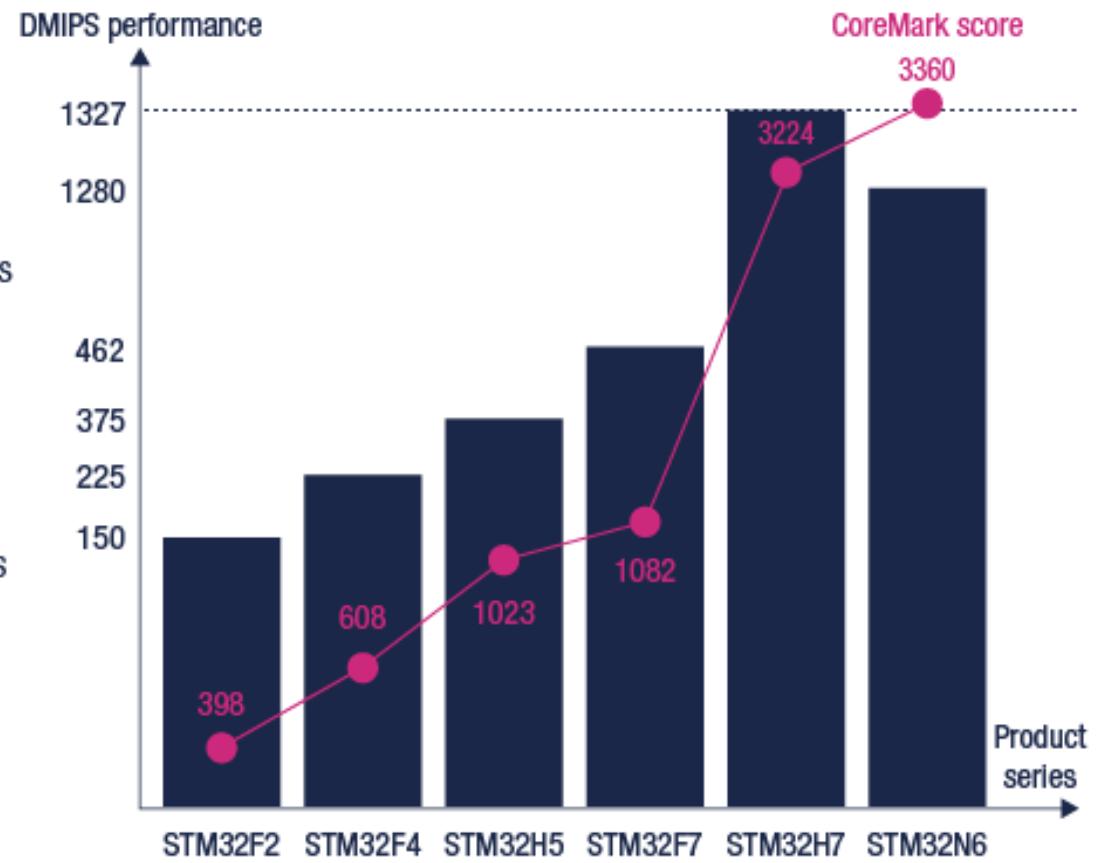




STM32 high-performance MCUs

Up to 3224 CoreMark and a rich set of peripherals

STM32N6	<ul style="list-style-type: none">Arm® Cortex®-M55 at 800 MHz – 1280 DMIPS4.2 MB embedded RAMFirst MCU with NPU: ST Neural-ART @ 600Gops
STM32H5	<ul style="list-style-type: none">Arm® Cortex®-M33 at 250 MHz – 375 DMIPSFrom 128 Kbytes to 2 Mbytes of Flash memoryHigh performance, scalable security, affordable
STM32H7	<ul style="list-style-type: none">Arm® Cortex®-M7 + Arm® Cortex®-M4 FPU at 480 MHz – 1327 DMIPS and up to 600 MHZ - 1284 DMIPS on single core Arm® Cortex®-M7From 64 Kbytes to 2 Mbytes of Flash memoryHigh Performance, scalable memory and security
STM32F7	<ul style="list-style-type: none">Arm® Cortex®-M7 + FPU at 216 MHz – 462 DMIPSFrom 256 Kbytes to 2 Mbytes of Flash memoryEmbedded flash & external memories
STM32F4	<ul style="list-style-type: none">Arm® Cortex®-M4 + FPU up to 180 MHz – 225 DMIPSFrom 64 Kbytes to 2 Mbytes of Flash memoryCost-effective and power efficiency
STM32F2	<ul style="list-style-type: none">Arm® Cortex®-M3 at 120 MHz – 150 DMIPSFrom 128 Kbytes to 1 Mbyte of Flash memoryFoundation lines for performance and connectivity



Legend: Latest product series/lines generation



STM32N6 MCU series

Achieve new performance levels



Enabling high-performance edge AI on MCUs

- Embedded proprietary neural processing unit, ST Neural-ART accelerator.
- 600 GOPS / 3 TOPS/W power consumption



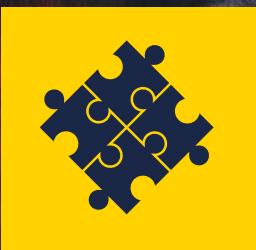
The most powerful STM32 series ever made

- 800 MHz Arm Cortex®- M55 core
- 1280 DMIPS / 3360 CoreMark



Elevating graphics & multimedia experiences

- Multiple graphics accelerators + multimedia encoder/decoder
- Computer vision pipeline



Streamlined development and integration

- Supported by ST Edge AI Suite tools, resources, & case studies
- Compatible with the TouchGFX packages for graphics



STM32H7Rx/Sx MCU lines

A scalable bootflash approach



Max performance: 600 MHz bootflash MCU

- Real-time execution from internal or external memories
- High speed serial & parallel memory interfaces up to 200MHz DTR.
- Large internal SRAM



High scalability to optimize your design & reduce costs

- Flexible external memory capacity
- 10 packages from cost-effective 68 up to 225 pins



Security assurance: ready for future security directives

- Target security certifications: SESIP Level 3 and PSA certified L3.
- On-the-fly decrypt/encrypt & secure boot



Best-in-class platform for graphics applications

- Powerful 2.5D NeoChrom GPU. Smart DMA architecture memory/GPU
- Enabling UIs with HD resolution



STM32H5 MCU series for high performance and strong security



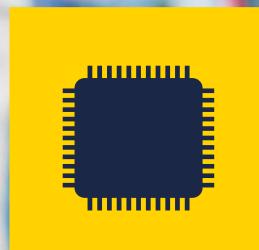
Most powerful Arm® Cortex®-M33 MCU

Industry-first 32-bit MCU with Arm® Cortex®-M33 core running as high as 250 MHz.



Scalable security to address every need

From the most essential security building blocks to fully certified services maintained by ST. First STM32 with TEE.



Optimized cost/performance trade-off

Based on ST's optimized 40 nm process technology.

Large choice of memory, peripherals, and package options.

STM32 mainstream MCUs





STM32 mainstream MCUs

Latest product generation

STM32C0

- Arm Cortex-M0+ at 48 MHz – 44 DMIPS
- Most affordable entry-cost STM32 32-bit MCU
- Affordable, reliable, continuum with STM32G0

STM32G0

- Arm Cortex-M0+ at 64 MHz – 59 DMIPS
- Maximum IO count per package
- Advanced function is analog, low-power, control

Legacy product

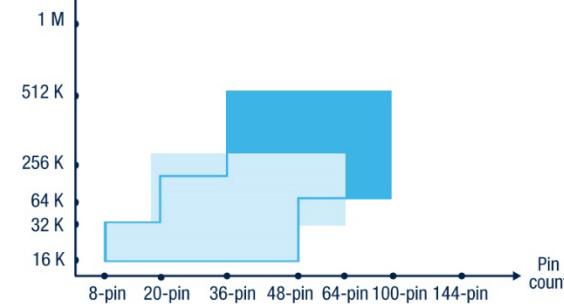
STM32F1

- Arm Cortex-M3 at 72 MHz – 61 DMIPS
- STM32 Foundation line
- Wide range of performance and peripherals, easy-to-use tools

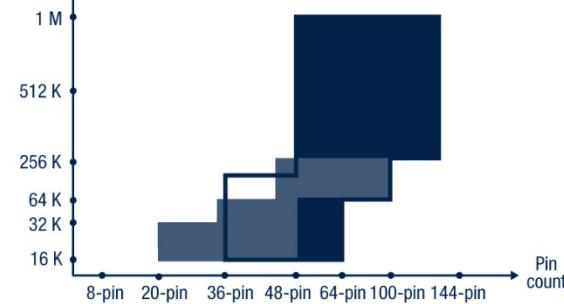
STM32F0

- Entry-level MCU for cost-sensitive operations
- Arm Cortex-M0 at 48 MHz – 38 DMIPS

Flash memory size (bytes)



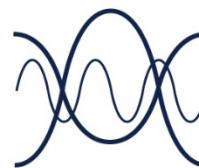
Flash memory size (bytes)



Mixed-signal MCUs

STM32G4

- Arm Cortex-M4 + FPU at 170 MHz – 213 DMIPS
- Rich analog peripheral set
- High-resolution timer
- Mathematical accelerators



Instrumentation & Measurement

STM32F3

- Arm Cortex-M4 + FPU at 72 MHz – 90 DMIPS
- Rich analog peripheral set
- High-resolution timer



Digital Power



Motor Control



STM32C0 MCU series

Your next 8-bit MCU is a 32-bit

Streamline costs without compromising performance
with ST's most compact & affordable 32-bit MCU



Affordability

Helps you reduce costs thanks to an attractive price point and an optimized BOM. Starting at \$0.24!

Reliability

Benefits from proven STM32 quality & reliability.
10 years longevity program.

Continuity

Consistent pinout with STM32G0 & shares same technological platform.

STM32 ultra-low-power MCUs





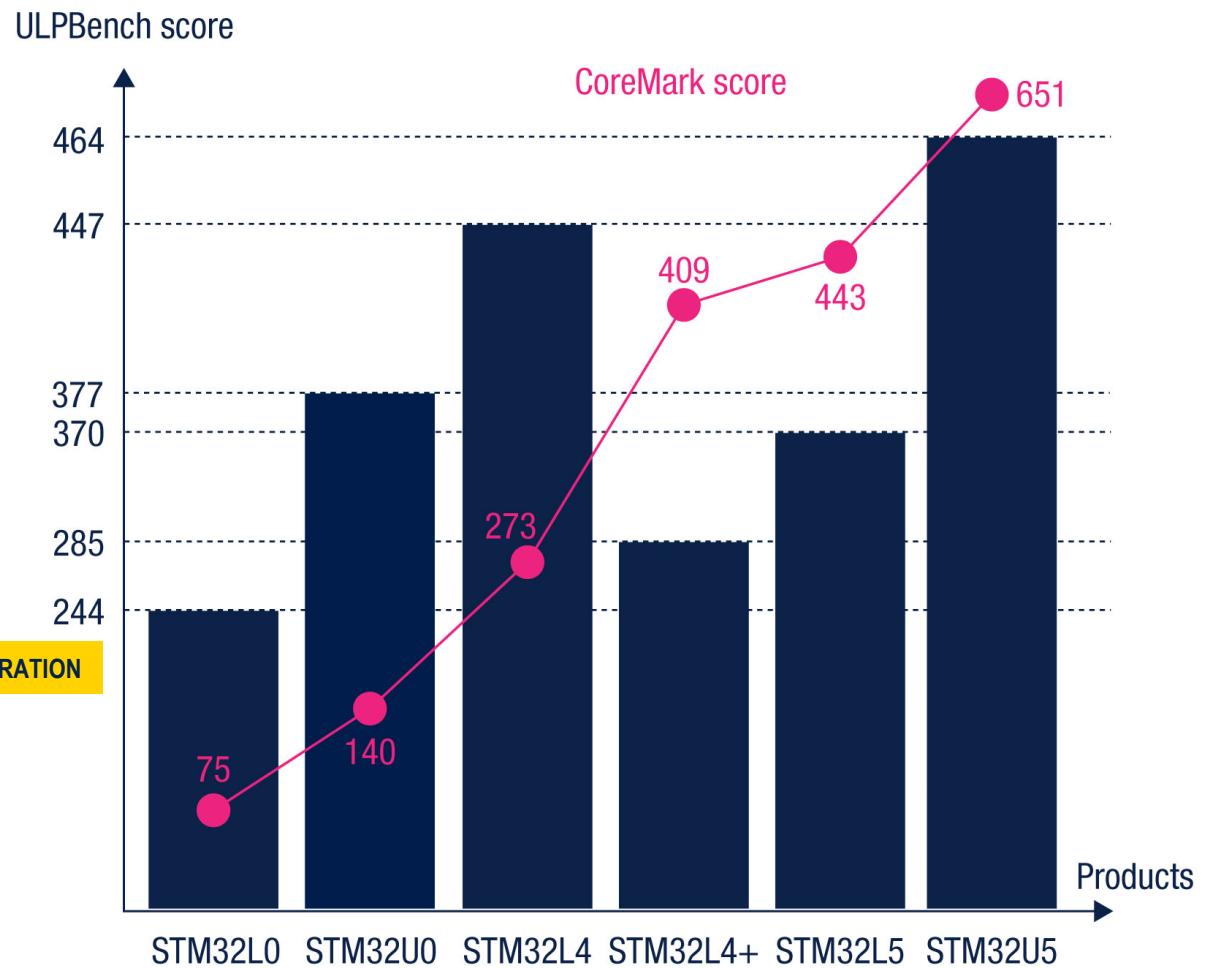
STM32 ultra-low-power MCUs

STM32U5	<ul style="list-style-type: none">• 32-bit Arm® Cortex®-M33 + FPU at 160 MHz• From 128 to 4 Mbytes of Flash memory• Lowest power mode with RAM + RTC: 0.35 µA
STM32L5	<ul style="list-style-type: none">• 32-bit Arm® Cortex®-M33 + FPU at 110 MHz• From 256 to 512 Kbytes of Flash memory• Lowest power mode with RAM + RTC: 0.35 µA
STM32L4+	<ul style="list-style-type: none">• 32-bit Arm® Cortex®-M4 + FPU at 120 MHz• From 512 Kbytes up to 2 Mbytes of Flash memory• Lowest power mode with RAM + RTC: 0.39 µA
STM32L4	<ul style="list-style-type: none">• 32-bit Arm® Cortex®-M4 + FPU at 80 MHz• From 64 Kbytes to 1 Mbyte of Flash memory• Lowest power mode with RAM + RTC: 0.34 µA
STM32U0	<ul style="list-style-type: none">• 32-bit Arm® Cortex®-M0+ at 56 MHz• From 16 to 256 Kbytes of Flash memory• Lowest power mode with RAM + RTC: 0.25 µA
STM32L0	<ul style="list-style-type: none">• 32-bit Arm® Cortex®-M0+ at 32 MHz• From 8 to 192 Kbytes of Flash memory• Lowest power mode with RAM + RTC: 0.67 µA

Legend:



Latest product series/lines generation





NeoChrom
GPU
Vector graphics

STM32U5 series

The flagship of ultra-low-power MCUs

For IoT & embedded applications, up to 4 Mbytes of flash memory

1st MCU certified by the NIST*

High energy efficiency/integration
Innovative power management features. Low power background autonomous mode (LPBAM), DMA, and IP autonomous in LP mode.

High security & safety
AES and PKA, side attack resistant. PSA-Certified and SESIP Level 3 target certifications.
ECC on flash memory and SRAM.

Enhanced graphic performance
First STM32 with advanced graphics accelerators (ART Accelerator) & NeoChrom Vector Graphics GPU based on Arm® Cortex® -M33 running at 160 MHz.

* *the National Institute of Standards and Technology* promotes U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life.



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

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.

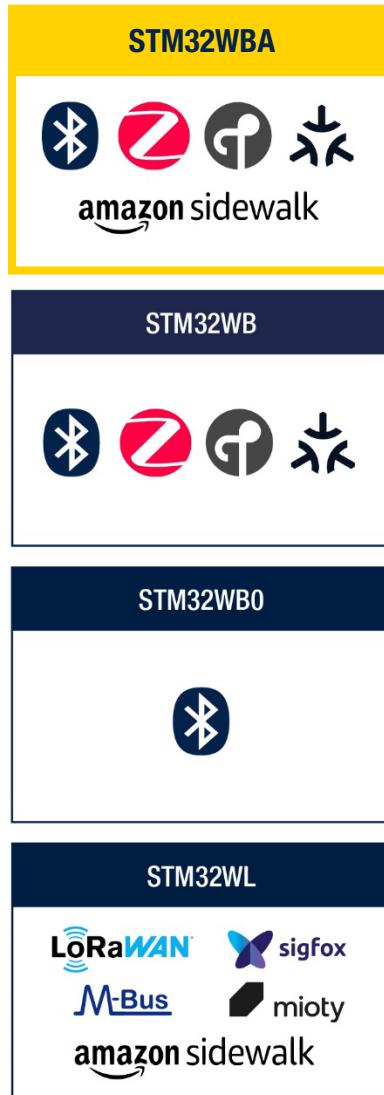
Cost effectiveness
Lower BOM costs thanks to high integration.
Attractive price point.
Building on proven STM32 ULP series for faster time to market.

STM32 wireless MCUs

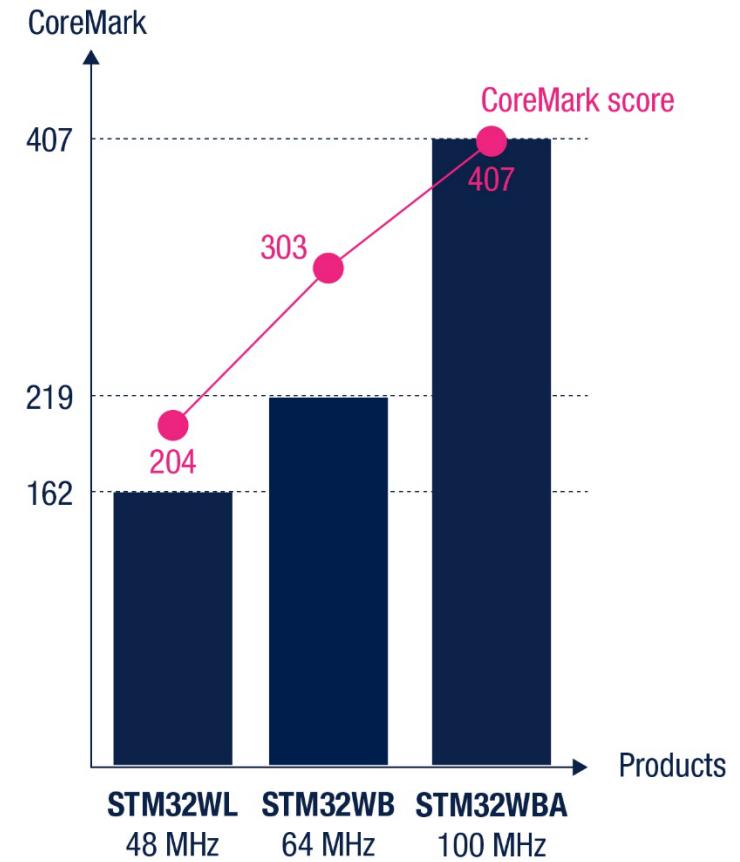




STM32 wireless MCUs



Legend: Latest product series/lines generation



Note (*): CoreMark from Flash memory @ 3 V
Pending certification



STM32WBA MCU series: performance & reliability

Faster time-to-market and higher performance for wireless short-range devices



Enhanced wireless performance

Multiprotocol: Bluetooth® LE 5.4, Zigbee, OpenThread, Matter.
+10 dBm output power with low power consumption.

Compliant with the latest security regulations

Featuring TrustZone® technology.
SESIP level 3 target certification.

Simpler and faster development

Rich ecosystem offering hardware, embedded software & tools, documentation.



STM32WB0 MCU series: performance, efficiency, and security for the IoT

Short-range wireless MCU, 2 Mbps, advertising extension
+8 dBm, isochronous channel, high security level



Certified for Bluetooth® Low Energy 5.3

Upgradable, highly modular, and robust Bluetooth® Low Energy stack, developed and maintained by ST.

High wireless performance

System performance: Arm® Cortex® -M0+ core at 64 MHz
Best-in-class radio enabling robust and stable connectivity

Longer battery life for IoT devices

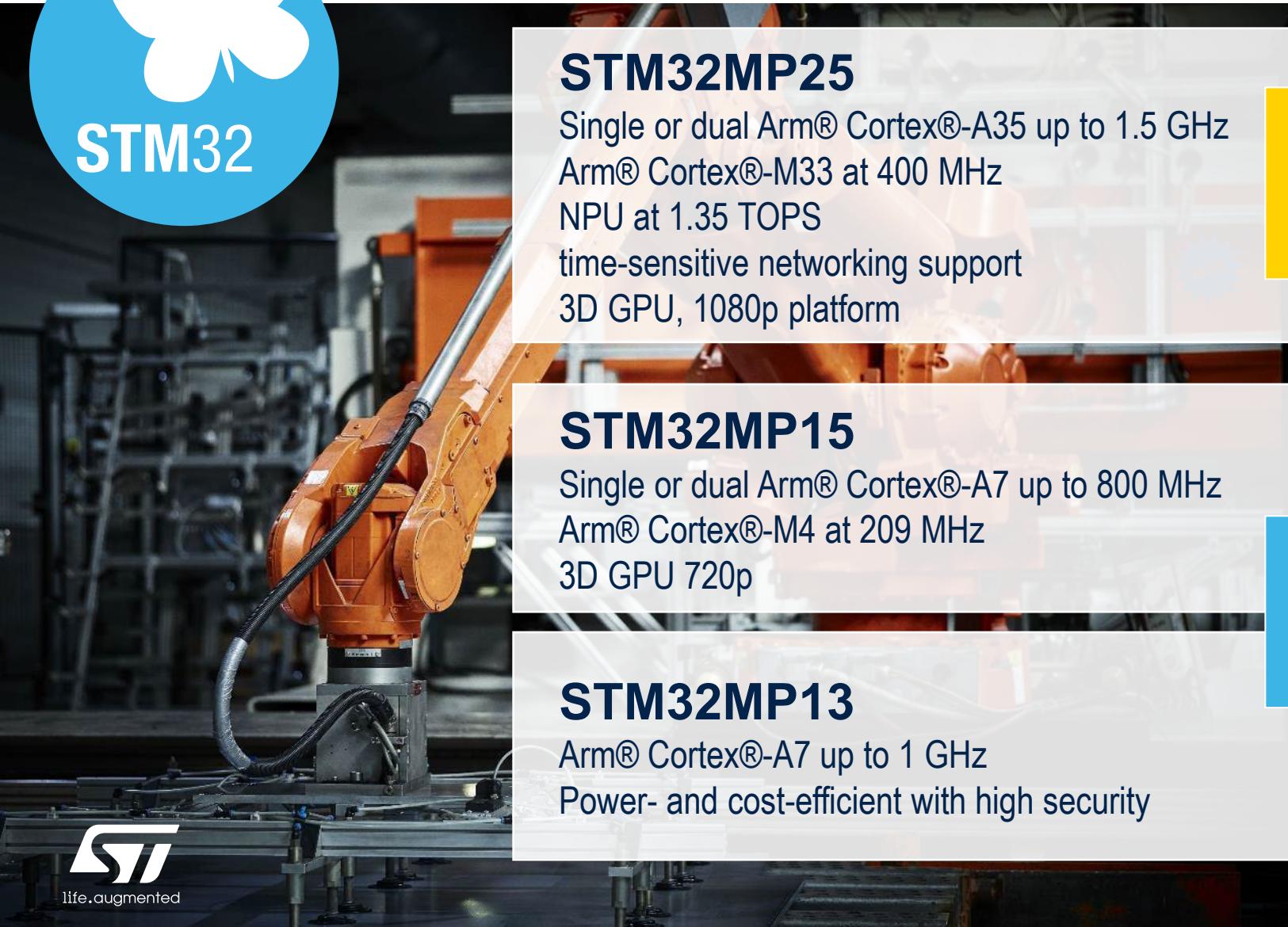
High efficiency: 15.5 µA/MHz from Cortex-M0+ and
3.9 mA radio peak Tx current / 3.2 mA radio peak Rx current

STM32 microprocessors



STM32 microprocessors

Making your industrial applications future-proof



STM32MP25

Single or dual Arm® Cortex®-A35 up to 1.5 GHz
Arm® Cortex®-M33 at 400 MHz
NPU at 1.35 TOPS
time-sensitive networking support
3D GPU, 1080p platform

STM32MP15

Single or dual Arm® Cortex®-A7 up to 800 MHz
Arm® Cortex®-M4 at 209 MHz
3D GPU 720p

STM32MP13

Arm® Cortex®-A7 up to 1 GHz
Power- and cost-efficient with high security

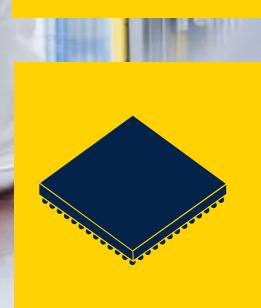
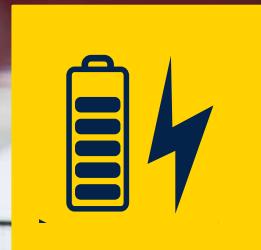
STM32MP2 series

STM32MP1 series



STM32MP13 MPU lines

Cost-efficient MPUs for industrial and secure applications



Power efficiency

- Best-in-class consumption in low power modes
- Over 90% energy savings in standby and VBAT modes

Certified security services for faster time to market

- SESIP L3 and PSA certified
- PCI ready

Accessible

- Strong, user-friendly ecosystem (OpenSTLinux, Linux-RT, RTOS)
- PCB layout reference designs



STM32MP2 MPU series a step up in performance



Robustness for complex industrial applications

- Industrial-grade MPU
- 10-year rolling longevity program

64-bit MPU with advanced compute capabilities, including edge AI acceleration

- NPU accelerator (up to 1.35 TOPS), run AI on CPU, GPU, or NPU
- Multimedia capabilities (1080p, 3D GPU, LVDS/DSI, and more)

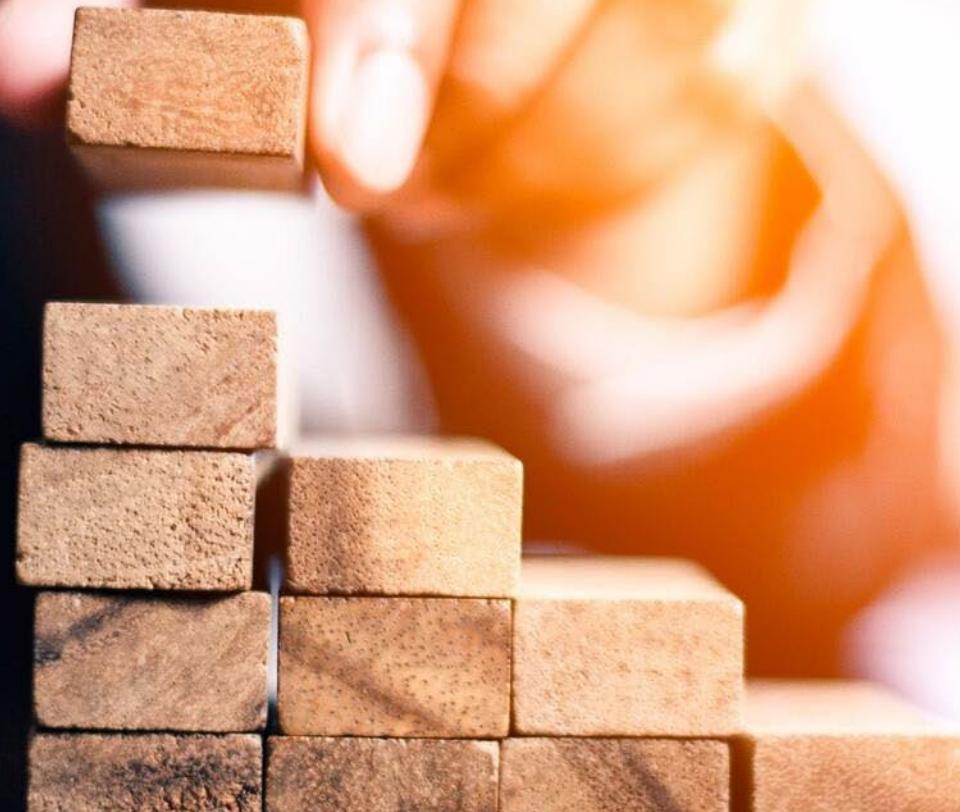
Supporting the growth of connected applications

- Hardware interfaces: TSN support, up to 3 gigabit Ethernet ports (with 2-port switch), PCIe Gen2, USB 3.0, 3 x CAN-FD
- Software & third-party ecosystem

Strong security

- SESIP3 certification target, TrustZone® on Cortex®-A & Cortex®-M,
- Secure provisioning ecosystem, Secure isolation for edge confidential computing

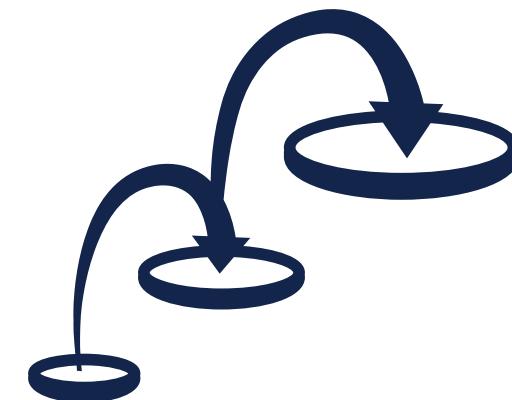
Developer-first strategy: STM32Cube



STM32Cube design ecosystem



**Hardware tools and software helping
you every step of your design journey**





STM32Cube framework

Helping developers release their creativity

Comprehensive offer helping you accelerate your development

Focus on quality, compatibility, and stability

Documentations, training and worldwide support channels

STM32 MCU and MPU Developer Zone 

Everything for STM32 developers in one place



Applicative reference implementations

Extension libraries and AI toolkit





STM32Cube framework

Tools and software supporting you during all your design steps

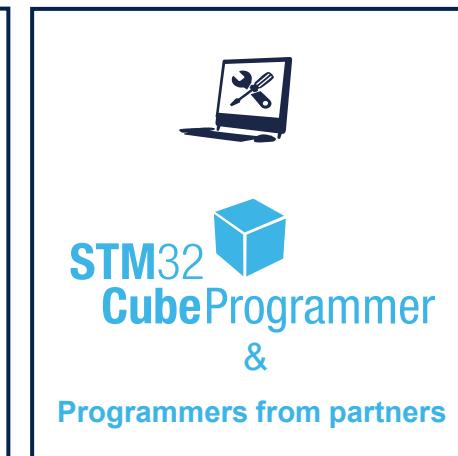
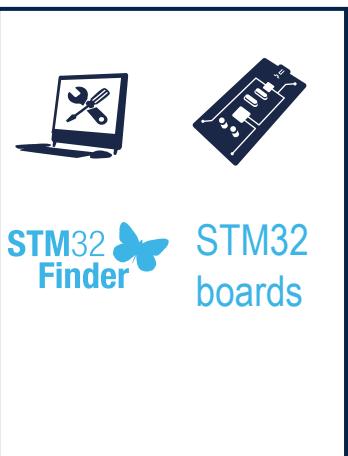
Evaluation,
prototyping,
and selection

Hardware and
software
configuration

Application development and debug

Code and hardware
options
programming

Runtime
application
monitoring



Worldwide support channels

STM32 hardware evaluation tools

Easy prototyping, accurate evaluation, and board design references

\$10 → \$30*



**STM32 Nucleo
boards**

Flexible
prototyping

70+ references

\$10 → \$100*



Discovery kits

Evaluating key
features

40+ references

\$100 → \$500*



**Evaluation
boards**

Full feature
evaluation

25+ references



**Expansion
boards**

Add-on functionalities

100+ references



Accessories



Partner boards

From full
evaluation to
open hardware

20+ references



STM32CubeMCU Packages

Efficient and flexible access to the MCU features

LL drivers

Lower abstraction level

Lower code size

HAL drivers

Higher abstraction level

Higher portability and reuse

MISRA C compliant, statically analyzed, rigorously tested

A large set of production-ready examples

Available from st.com, GitHub, or STM32Cube tools



STM32CubeMCU Packages

Faster development with an optimized and ported selection of market-reference middleware stacks

Middleware

AzureRTOS ThreadX and FreeRTOS™

AzureRTOS USBX

With support of audio, CDC, HID, DFU, PIMA, printer, and storage host and device classes

AzureRTOS NetXDuo

With support of TCP, UDP, IPv4, IPv6, http, MQTT, LWM2M, FTP, PPP, SMTP, and telnet

FileX and levelX

USB PD and open bootloader

Secure boot, Secure Manager API

Expansions

TouchGFX graphics solution,

Motor control,

Artificial intelligence

MEMS and sensors

Secure cloud connectors

Functional safety self-test library

A large set of applicative examples

Available from st.com, GitHub, or STM32Cube tools

STM32 Developer Zone for MCUs & MPUs



**Everything for STM32 MCU & MPU
developers, in one place**

**A user-friendly environment to help developers
every step of their design journey**

**Direct access to products, hardware and software
tools, embedded software, developer resources**



[STM32 MCU Developer Zone](#)

[STM32 MPU Developer Zone](#)



[Watch the short video](#)

A growing base of partners addressing customer challenges



[Software development tools](#)

[Hardware development tools](#)

[Embedded software](#)

[Evaluation boards](#)

[Development boards](#)

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our partners

Solutions with STM32





Helping you build advanced HMIs with a comprehensive STM32 graphic offering



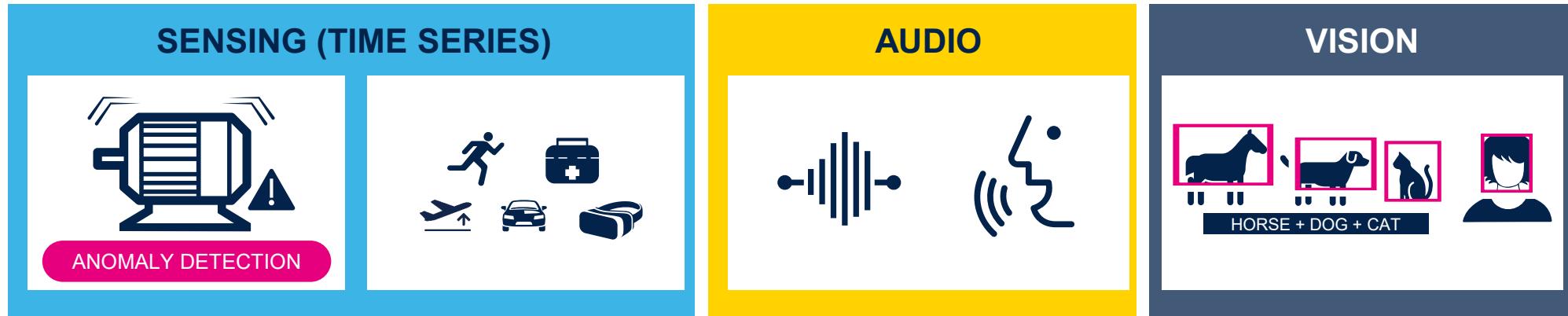
The NeoChrom GPU offloads the CPU from the graphic computations, freeing up the memory and boosting performance. Fully supported in X-CUBE-TOUCHGFX.



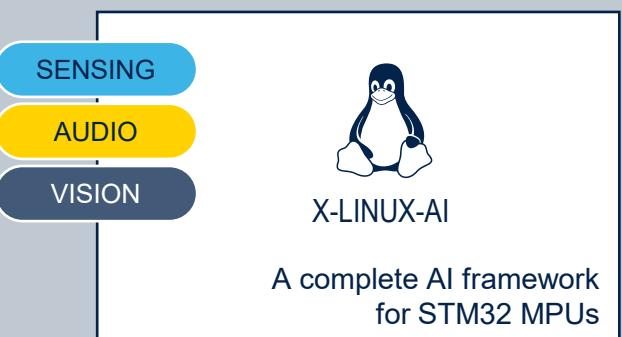
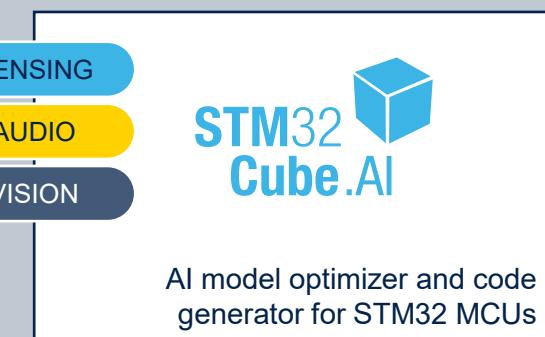
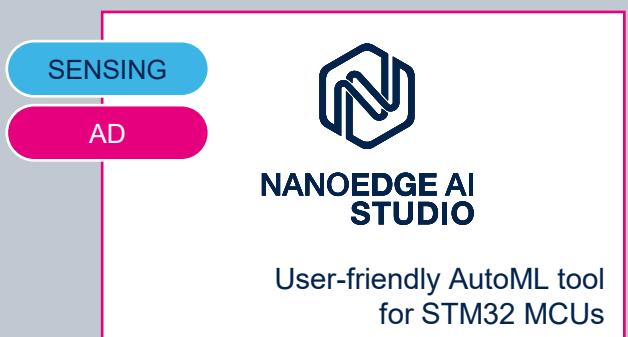
[Watch demos, tutorials, and more](#)

Making edge AI more accessible with STM32 solutions

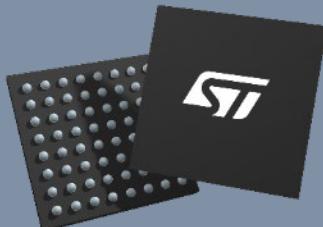
Enabling major edge AI technologies



Software tools for any user profile



Large choice of general purpose & accelerated hardware



STM32 MCUs



STM32N6 MCU



STM32MP1 & STM32MP2 MPUS



Fast-track your certification journey to meet functional safety standards with STM32

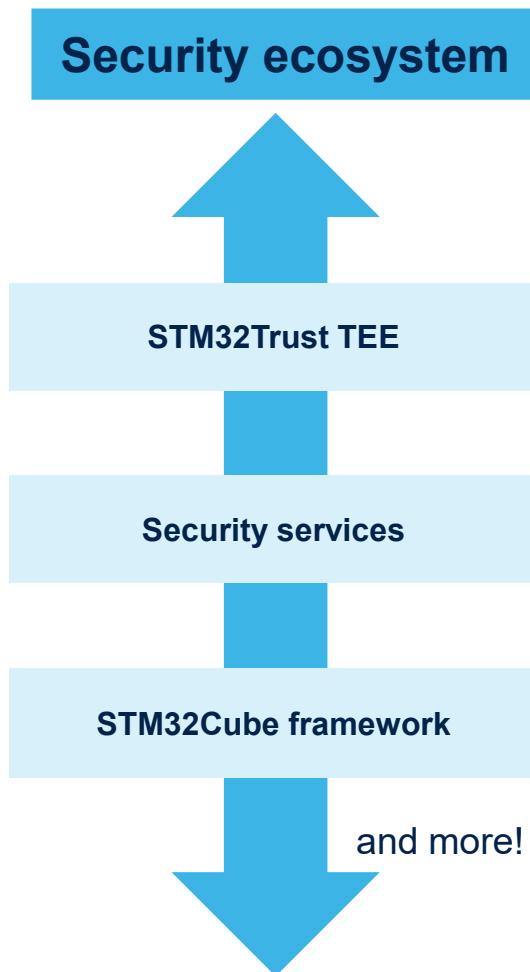
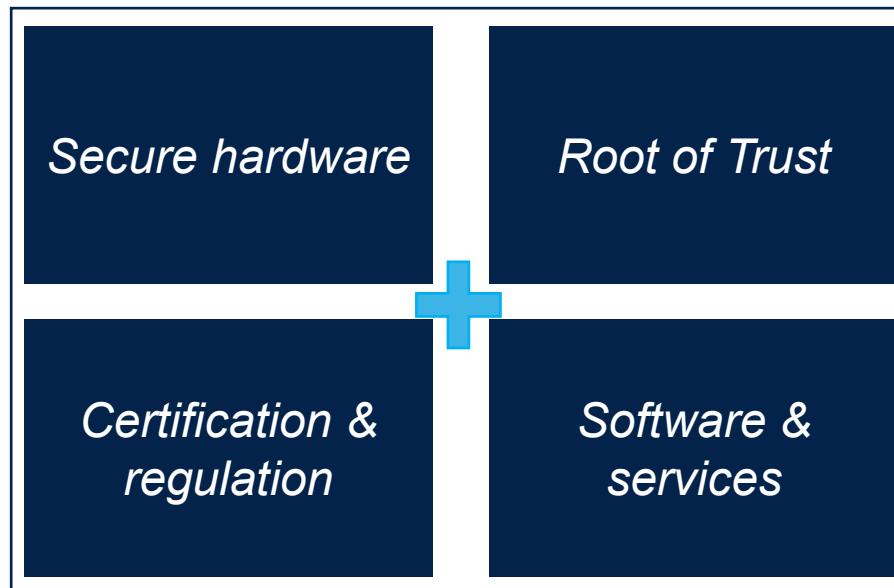
ST provides certified **functional safety packages** and documentation based on robust built-in MCU/MPU safety features.

- **SIL functional safety package**
for industrial IEC 61508 (STM32)
- **ASIL functional safety package**
for automotive ISO 26262 (STM8A)
- **Class B functional safety package**
for household electrical appliances
IEC 60335-1/60730-1 (STM32 & STM8)

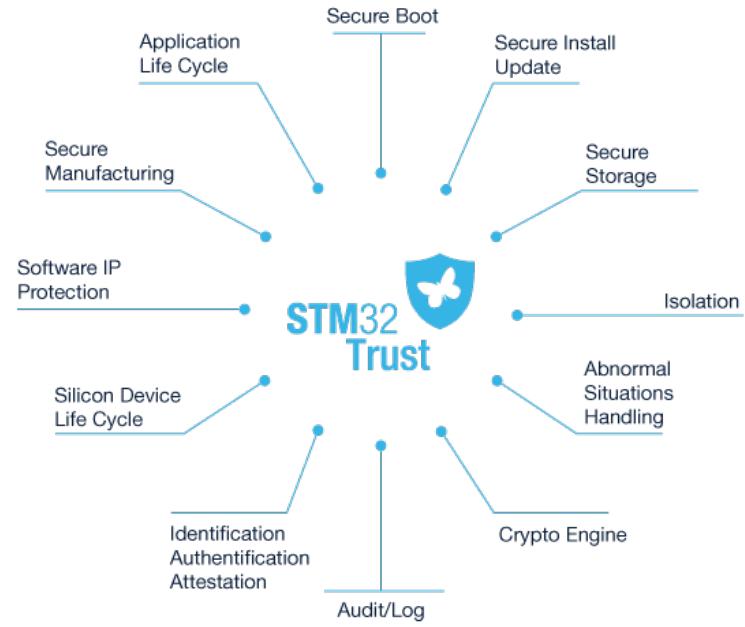




Building trust in embedded systems: the pillars of STM32Trust



Security in STM32



**Provide the right levels of security
assurance thanks to the
STM32Trust security functions**



www.st.com/STM32Trust



Latest release ■

STM32Trust – target certifications

MPU				STM32MP15 Native Secure Boot TF-A + OPTEE	PSAL1	SESIP3	PSAL3	SESIP3
★ High Perf MCUs				PSAL1	STM32H7	PSAL3	SESIP3	PSAL3
	STM32F2	STM32F4	STM32F7			STM32H5	PSAL3	SESIP3
						Native Secure Boot Secure Manager & ST-RoT	STM32H7S	Native Secure Boot ROMless
							STM32N6	PSAL3
>> Mainstream MCUs	Mixed-signal MCUs			PSAL1	STM32G4	Memory Hide Protect Feature		
	STM32F0	PSAL1	STM32G0		PSAL1	STM32C0	Memory Hide Protect Feature	
			Memory Hide Protect Feature					
		PSAL1	STM32L4	PSAL1	STM32L5	PSAL3	SESIP3	PSAL3
Ultra-low Power MCUs				PCI DSS COMPLIANT	X-Cube-SBSFU with STSAFE support	STM32L4+	STM32U5	SESIP3
						STM32L5	1st STM32 With CM33 core	STM32U0
							1st STM32 with Secure storage HW	
Wireless MCUs	STM32WL5	STM32WB	X-Cube-SBSFU with Customer Key Storage	PSAL1	STM32WB0	PSAL3	SESIP3	STM32WBA5x

Note: information reflects highest die security targets

Motor control with STM32

Ease STM32 adoption
for motor control

Providing development platform:
MC-SDK (firmware library +
workbench), MC pilot, MC profiler,
hardware boards, documentation.

Innovative
products/peripherals
and software
algorithms

- Advanced motor control timer
- Rich and advanced analog peripherals embedded in the STM32
- Motor profiler
- STM32 ZeST and HSO / sensorless algorithms

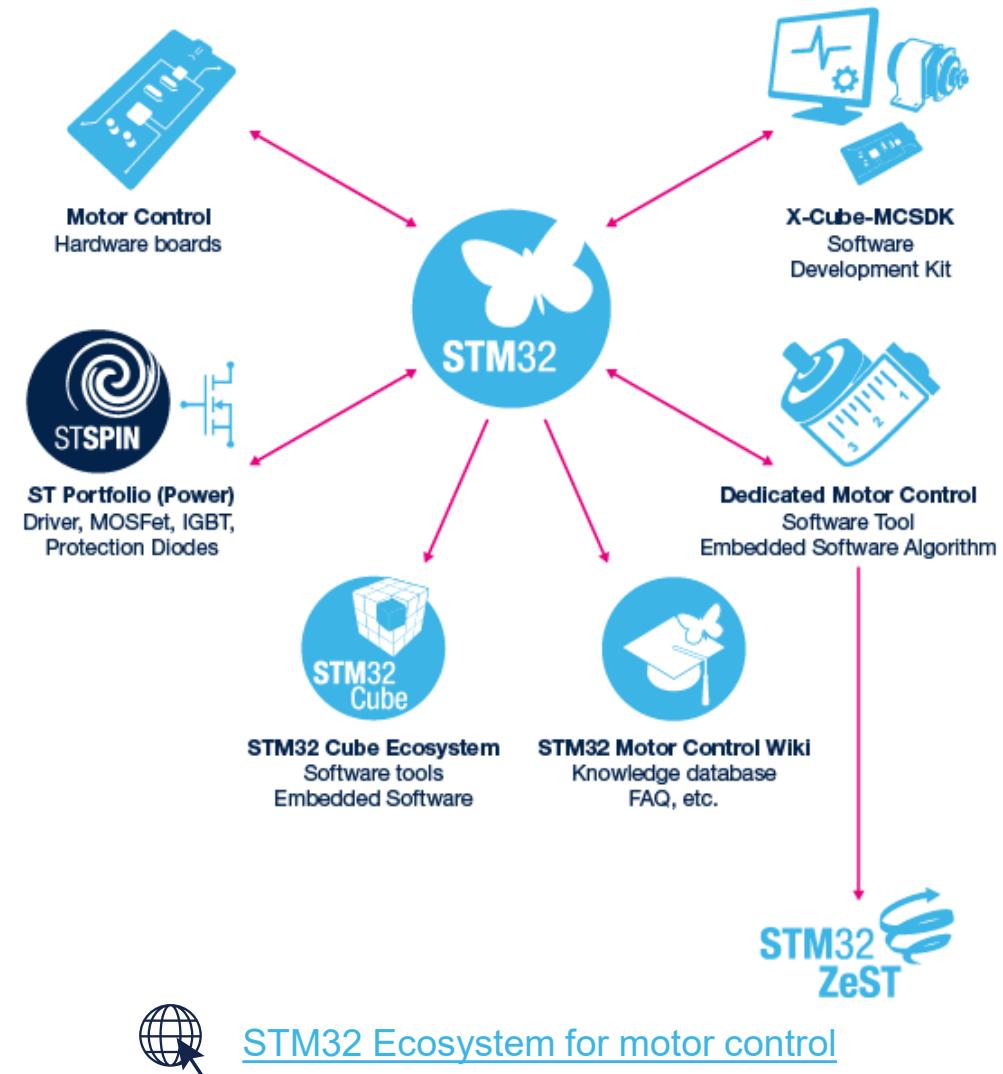
Leverage ST portfolio

Large choice of power components and STM32 to create end-to-end motor control solutions.



Software algorithm providing full torque at zero speed for any kind of BLDC/PMSM motor in sensorless mode (in addition to the observer HSO algorithm)

LATEST NEWS



Digital power with STM32

Ease STM32 adoption for digital power converters

Development platforms:
DP SDK (PFC and PSU topology examples generator, firmware lib), hardware boards, docs, development tools.

Innovative products/peripherals and software algorithms

- High-resolution timer supporting numerous digital power topologies
- Rich and advanced analog peripherals embedded in STM32
- Hardware coprocessor usage
- Biricha method implementation (ST Authorized Partner)

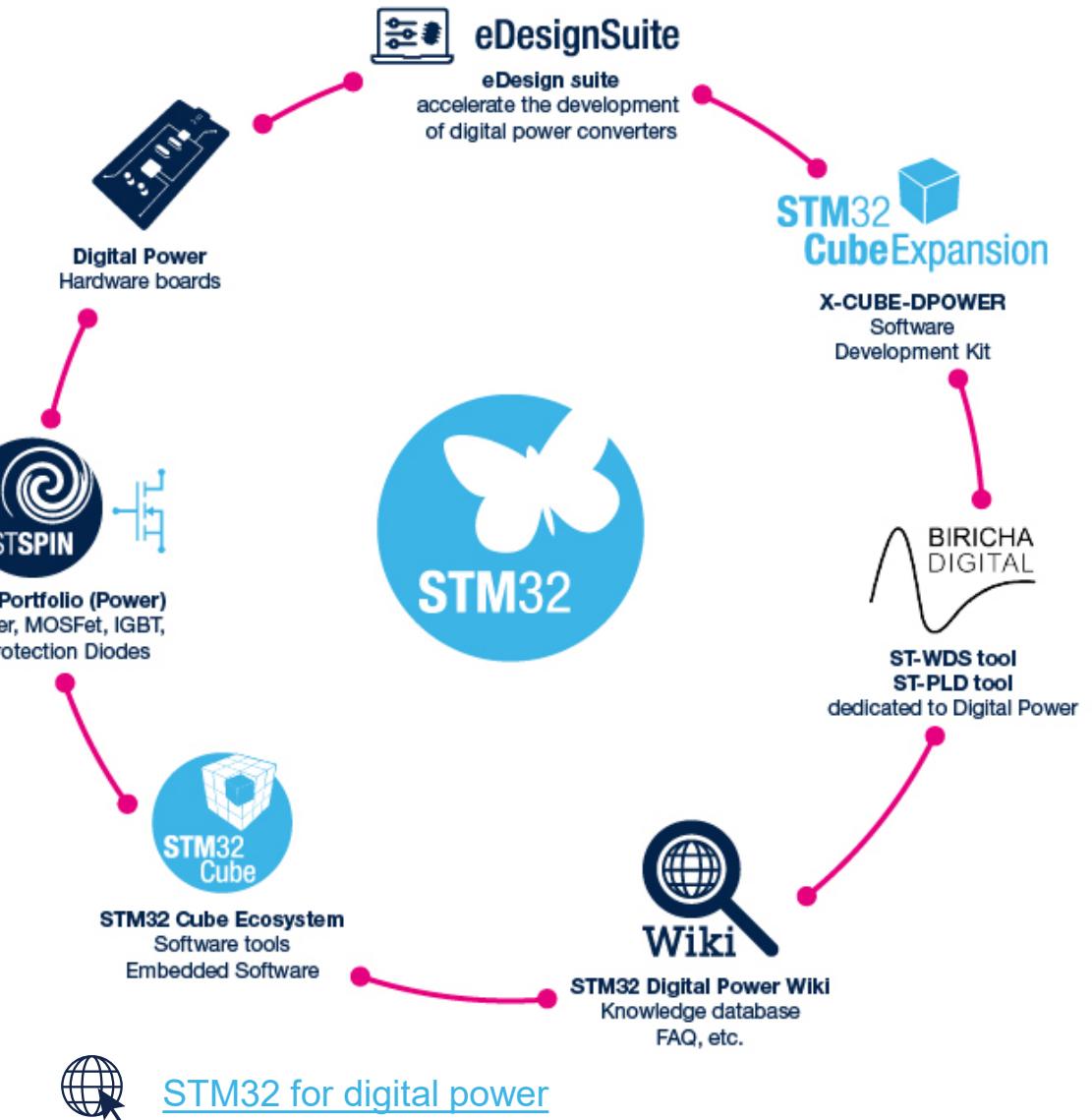
Leverage ST portfolio

Large choice of power components and STM32 to create end-to-end digital power solutions.

PFC and PSU within STM32CubeMX

Firmware pack importation with PFC and PSU topologies implementation in voltage or in current mode running on ST boards.

LATEST NEWS





Saving time, cost, and reducing complexity with STM32

**STM32 with USB Type-C® connector simplifies your design,
eliminating the need for an external PD controller**



Fast prototyping without coding

- Ready-to-use hardware and firmware examples
- Code generation for all USB-C roles on STM32
- Easy debug with STM32CubeMonUCPD software tool



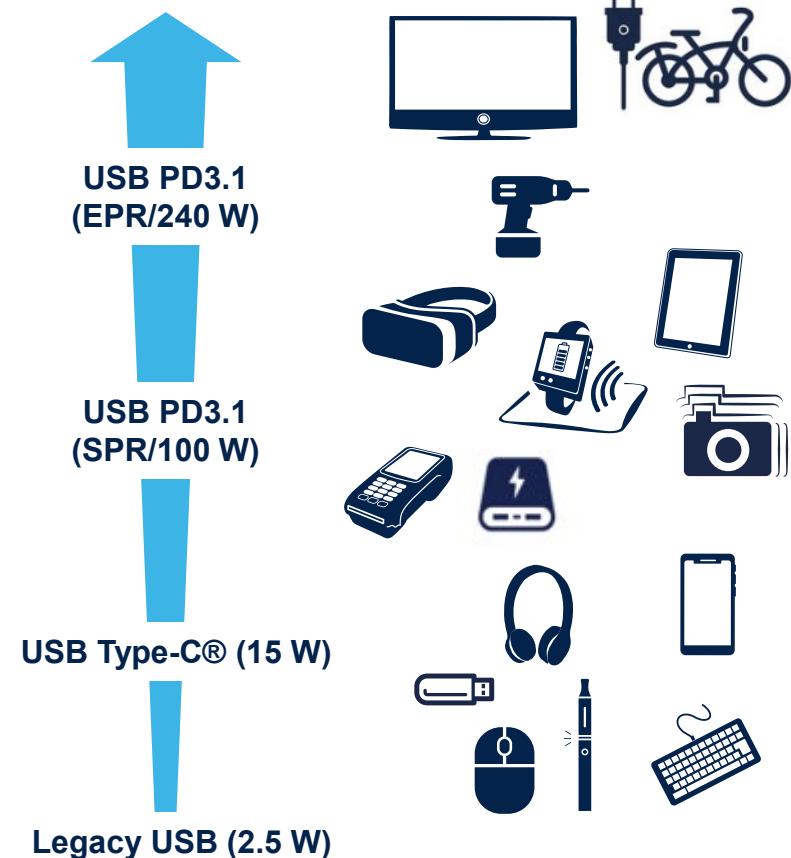
Optimize bill of material and safety

- CC logic, PD transceiver PHY, USB2 device/host interface
- Companion Type-C Port Protection devices (TCPP0x)



STM32 supports the latest USB Type-C® and PD3.1 standards

- SPR and EPR(*) power range up to 240 W, PPS ready. Sink, source, dual-role power and data roles
- UCPD peripheral is USB-IF certified & supports connector management and USB PD r3.1 protocol (SPR, EPR*, PPS etc.)





Resources to move forward with your design

1 Million developers worldwide are using STM32.
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FIND INSIGHTS



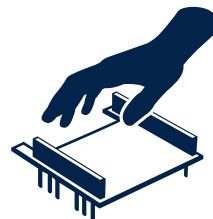
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