

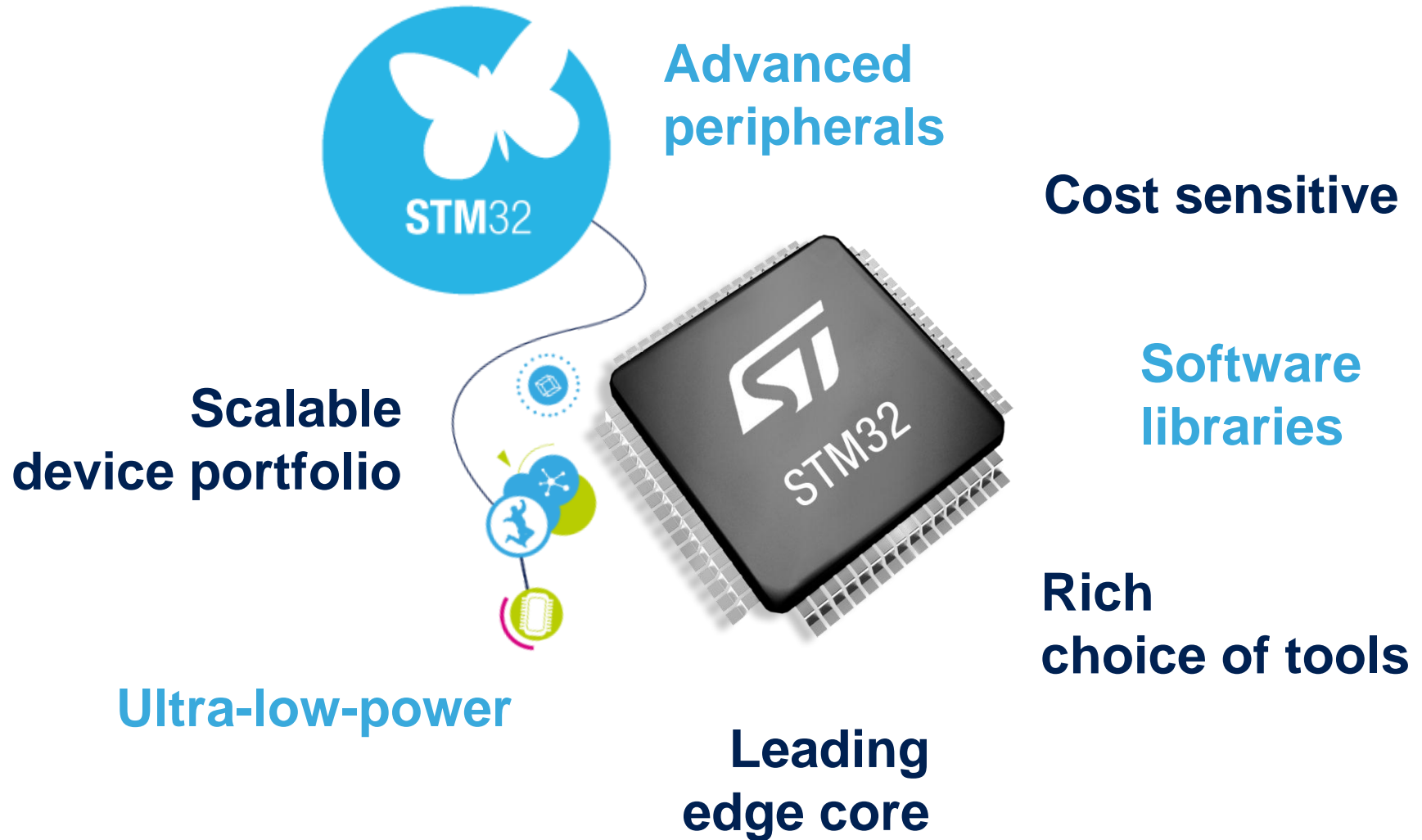


STM32 32-bit Cortex™-M MCUs

Releasing your creativity






What does a developer want in an MCU?

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STM32 platform key benefits

3

Real-time performance Cortex Intelligent Processors by ARM®	Outstanding power efficiency	Superior and innovative peripherals	Maximum integration	Extensive ecosystem
 ART Accelerator, Chrom-ART Accelerator, CCM-SRAM, Multi-AHB bus matrix, Excellent real-time up to 180 MHz/225 DMIPS zero-wait state execution performance from Flash	 < 1 μ A RTC in V_{BAT} mode, ultra-low dynamic power consumption 140 μ A/MHz 1.65 to 3.6 V V_{DD} , 0.45 μ A Stop mode and 0.3 μ A Standby mode	 USB-OTG High Speed, camera interface, Ethernet, CAN, TFT controller, crypto/hash processor, PGA, sigma-delta 16-bit ADC and 12-bit ADC (up to 5 MSPS), external memory interface, CEC	 Reset circuitry, voltage regulator, internal RC oscillator, PLL	 ARM + ST ecosystem (eval boards, discovery kits, software libraries, RTOS)

More than **450 compatible devices**
Releasing your creativity



STM32 a comprehensive platform

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Flash size (bytes)

2 M

*Select your fit product inside a
wide, compatible portfolio*

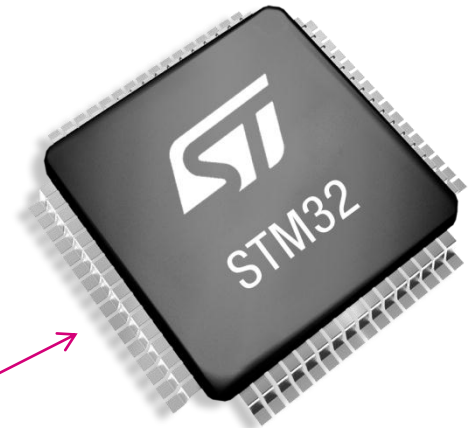
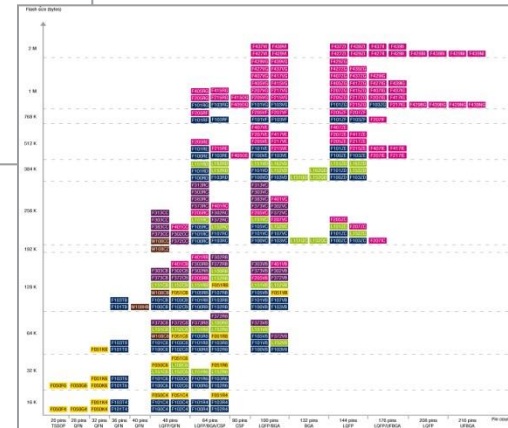
Cortex™-M3/M4/M0
Flash – High performance



16 K



20 pins



216 pins

STM32 – 7 product series

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Common core peripherals and architecture:

Communication peripherals: USART, SPI, I ² C
Multiple general-purpose timers
Integrated reset and brown-out warning
Multiple DMA
2x watchdogs Real-time clock
Integrated regulator PLL and clock circuit
External memory interface (FSMC)
Up to 3x 12-bit DAC
Up to 4x 12-bit ADC (Up to 5 MSPS)
Main oscillator and 32 kHz oscillator
Low-speed and high-speed internal RC oscillators
-40 to +85 °C and up to 105 °C operating temperature range
Low voltage 2.0 to 3.6 V or 1.65/1.7 to 3.6 V (depending on series)
Temperature sensor

STM32 F4 series - High performance with DSP (STM32F401/405/415/407/417/427/437/429/439)

180 MHz Cortex-M4 with DSP and FPU	Up to 256-Kbyte SRAM	Up to 2-Mbyte Flash	2x USB 2.0 OTG FS/HS	3-phase MC timer	2x CAN 2.0B	SDIO 2x I ² S audio Camera IF	Ethernet IEEE 1588	Crypto TFT LCD + SDRAM
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STM32 F3 series - Mixed-signal with DSP (STM32F302/303/313/372/373/383)

72 MHz Cortex-M4 with DSP and FPU	Up to 48-Kbyte SRAM & CCM-SRAM	Up to 256-Kbyte Flash	USB 2.0 FS	2x 3-phase MC timer (144 MHz)	CAN 2.0B	Up to 7x comparator	3x 16-bit ΣΔ ADC	4x PGA
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STM32 F2 series - High performance (STM32F205/215/207/217)

120 MHz Cortex-M3 CPU	Up to 128-Kbyte SRAM	Up to 1-Mbyte Flash	2x USB 2.0 OTG FS/HS	3-phase MC timer	2x CAN 2.0B	SDIO 2x I ² S audio Camera IF	Ethernet IEEE 1588	Crypto
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STM32 F1 series - Mainstream - 5 product lines (STM32F100/101/102/103 and 105/107)

Up to 72 MHz Cortex-M3 CPU	Up to 96-Kbyte SRAM	Up to 1-Mbyte Flash	USB 2.0 OTG FS	3-phase MC timer	Up to 2x CAN 2.0B	SDIO 2x I ² S audio	Ethernet IEEE 1588
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STM32 F0 series – Entry level (STM32F030/50/051)

48 MHz Cortex-M0 CPU	Up to 8-Kbyte SRAM	Up to 64-Kbyte Flash	3-phase MC timer	Comparator	CEC
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STM32 L1 series - Ultra-low-power (STM32L100/151/152/162)

32 MHz Cortex-M3 CPU	Up to 48-Kbyte SRAM	Up to 384-Kbyte Flash	USB FS device	Up to 12-Kbyte EEPROM	LCD 8x40 4x44	Comparator	BOR MSI VScal	AES 128-bit
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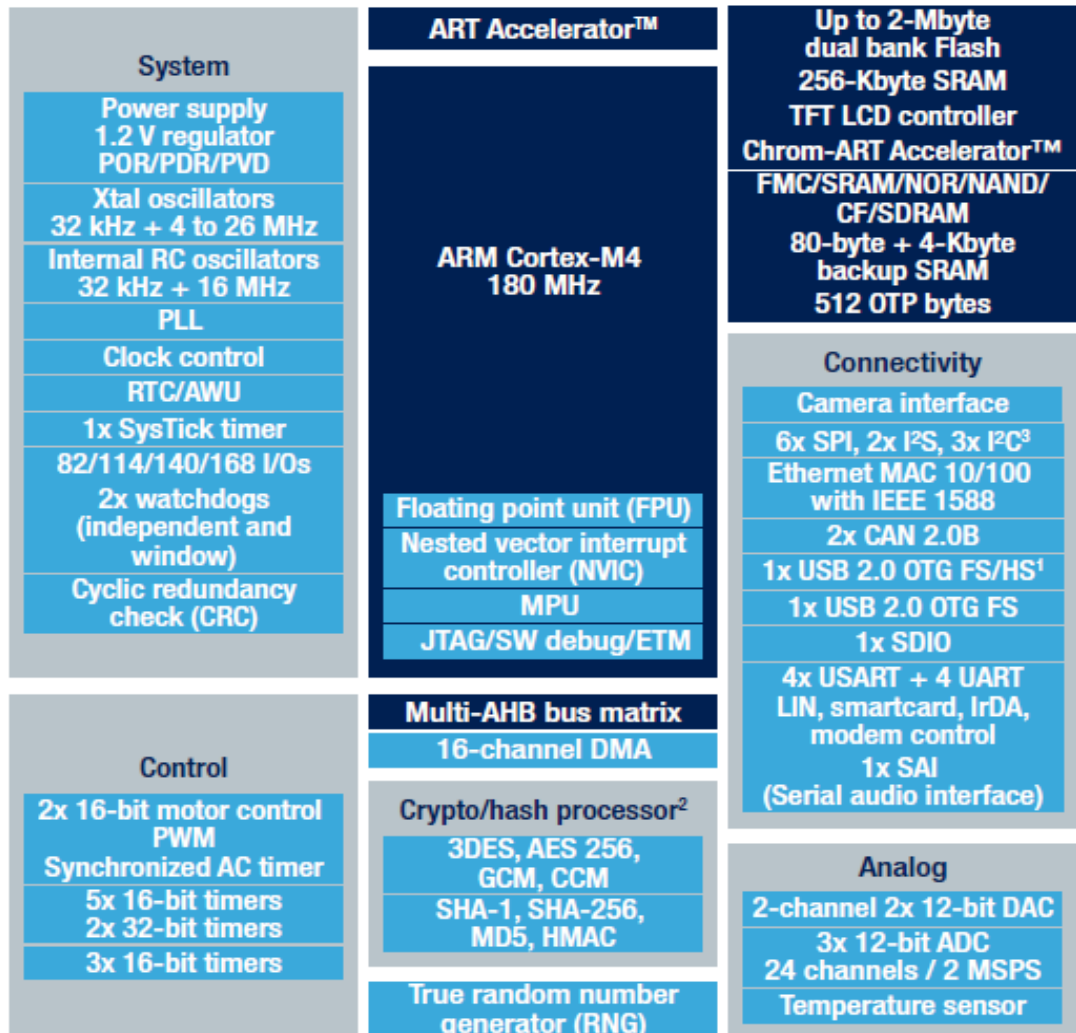
STM32 W series - Wireless (STM32W108)

24 MHz Cortex-M3 CPU	Up to 16-Kbyte SRAM	Up to 256-Kbyte Flash	2.4 GHz IEEE 802.15.4 Transceiver	Lower MAC Digital baseband	AES 128-bit
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STM32 F4 2MB block diagram

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Notes:

1. HS requires an external PHY connected to the ULPI interface
2. Crypto/hash processor on STM32F415, STM32F417, STM32F437 and STM32F439
3. With digital filter feature

ST has licensed Cortex-M processors

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- **Forget traditional 8/16/32-bit classifications and get**
 - Seamless architecture across all applications
 - Every product optimized for ultra-low power and ease of use

Cortex-M0

8/16-bit applications

Cortex-M3

16/32-bit applications

Cortex-M4

32-bit/DSC applications

Binary and tool compatible



Floating Point Unit (FPU) ●

DSP (SIMD, fast MAC) ●

Advanced data processing

Bit field manipulations

General data processing
I/O control tasks



STM32 applications

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• Industrial

- PLC
- Inverters
- Printers, scanners
- Industrial networking
- Solar inverters



• Medical

- Glucose meters
- Portable medical care
- VPAP, CPAP
- Patient monitoring



• Buildings and security

- Alarm systems
- Access control
- HVAC
- Power meters



• Appliances

- 3-phase motor drives
- Application control
- User interfaces
- Induction cooking



• Consumer

- Home audio
- Gaming
- PC peripherals
- Digital cameras, GPS



A large community of partners

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Hardware Development Tools

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- Discovery Kits



- Evaluation Boards



- Open Hardware Boards

- Arduino-based

- Leaf labs Maple, Olimexino-STM32, Netduino,...

- Microsoft Gadgeteer-based

- Netduino Go, Mountaineer, GHI...



- Debug Probes and Programming Tools

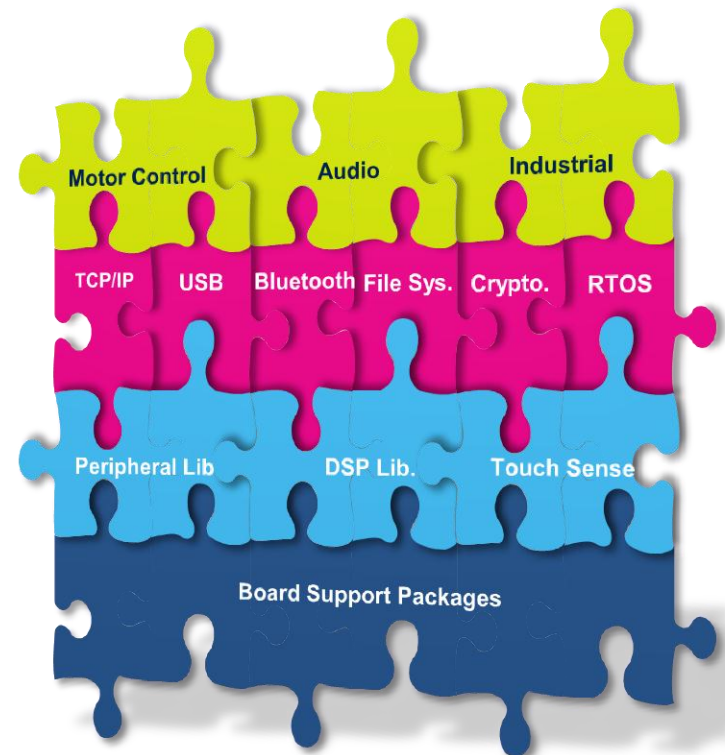
- ST-Link
 - J-Link
 - Ulink



Embedded Software (Firmware)

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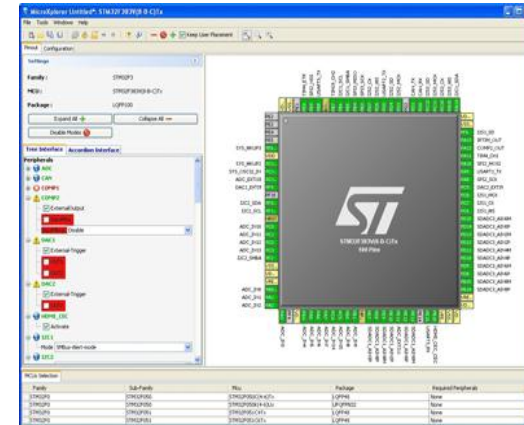
- HAL / Drivers
 - ST Boards Support Packages (BSP)
 - Peripheral Libraries (Drivers)
 - DSP Library
- RTOS / Firmware Stacks
 - RTOS
 - Cryptographic
 - USB
 - TCP/IP
 - File Systems
 - BlueTooth
 - Zigbee
 - Graphism
 - Touch sensing
- Application Bricks
 - Audio
 - Industrial
 - Motor Control
- High Level Frameworks (STM32 only)
 - Java
 - Microsoft .Net Micro Framework
 - Matlab/Simulink



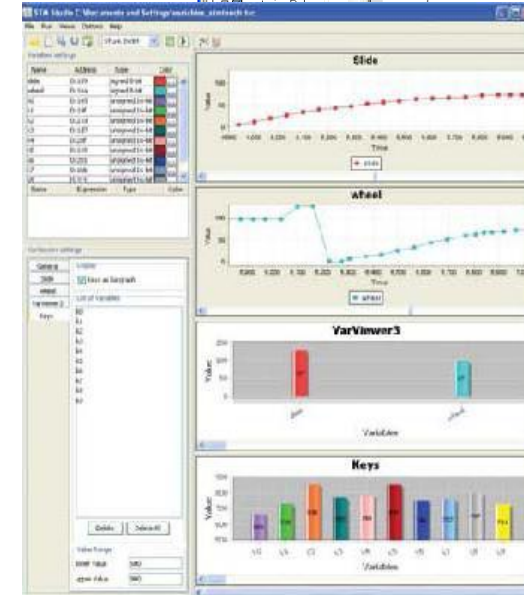
Software Development Tools

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- Configuration Tools
 - µXplorer
- Development and Debugging Tools
 - IAR EWARM
 - Keil MDK
 - Atollic TrueStudio
 - Rowley CrossWorks
 - Embest CooCox
 - Segger emIDE
 - Code Red RedSuite
 - Raisonance Ride
 - Altium Tasking
 - Cosmic Idea
 - Yagarto...
- Monitoring Tools
 - STMStudio



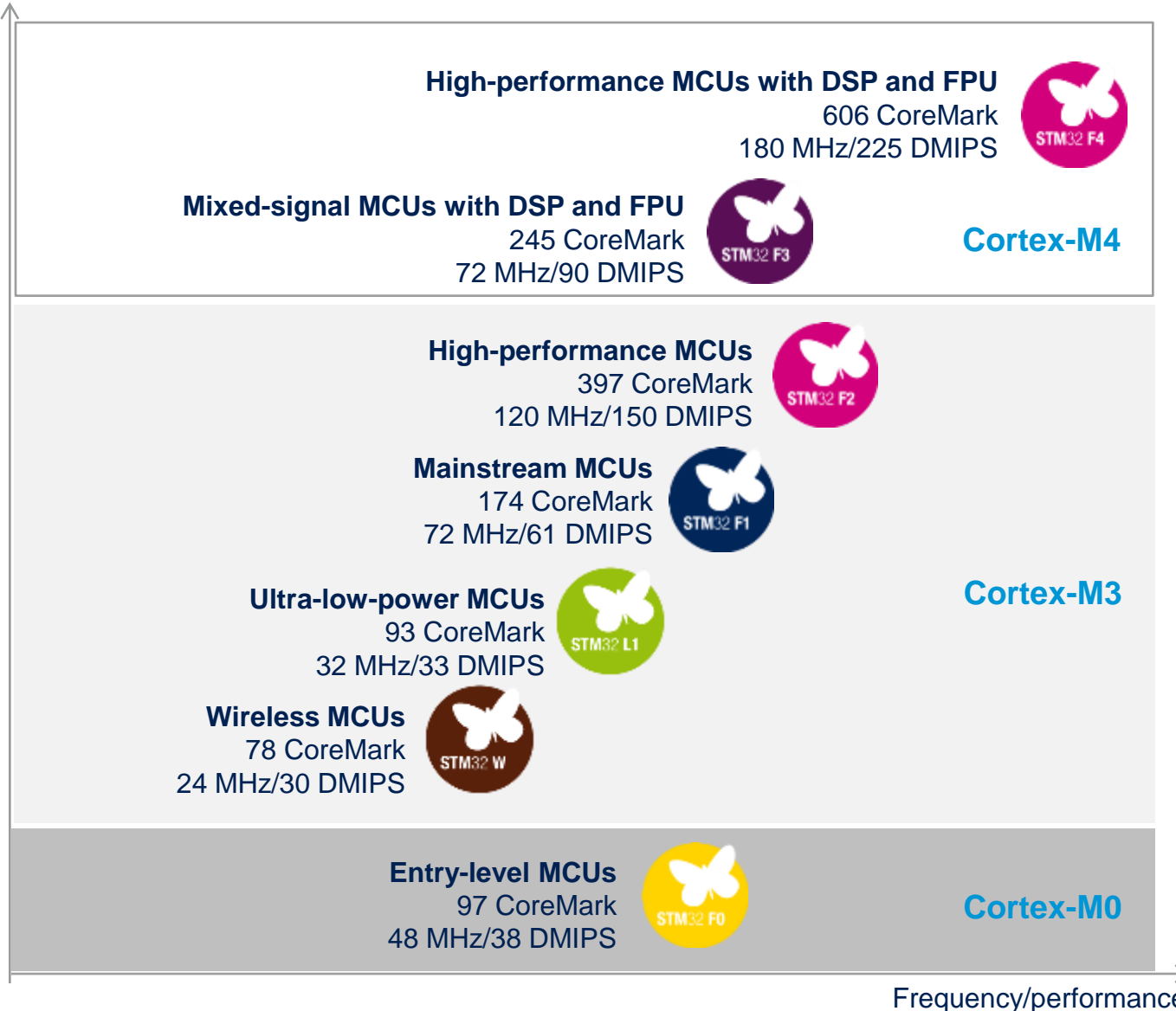
```
// Turn on the LED.  
GPIO_PORTA_DATA_R |= 0x02;  
  
// Delay for a bit.  
for(uiloop = 0; uiloop < 200000; uiloop++)  
{  
    // ...  
}
```



STM32 offer by performance core

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Core/features



Thank you

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STM32

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www.st.com/stm32