

# Cypress PSoC® 6 Microcontrollers

*Purpose-Built for the Internet of Things*

[WWW.CYPRESS.COM/PSOC6](http://WWW.CYPRESS.COM/PSOC6)



*Unmatched Solutions for the Internet of Things*

## EMBEDDED IN TOMORROW

The IoT is exploding, with more than 30 billion devices projected to be in service by 2020. Cypress' IoT leadership is built upon world-class wireless technology, a broad portfolio of MCUs, memories, analog ICs and USB controllers. Our solutions are helping transform traditional markets like industrial, home appliances, medical, and consumer, producing next-generation smart devices and connected/autonomous vehicle applications.

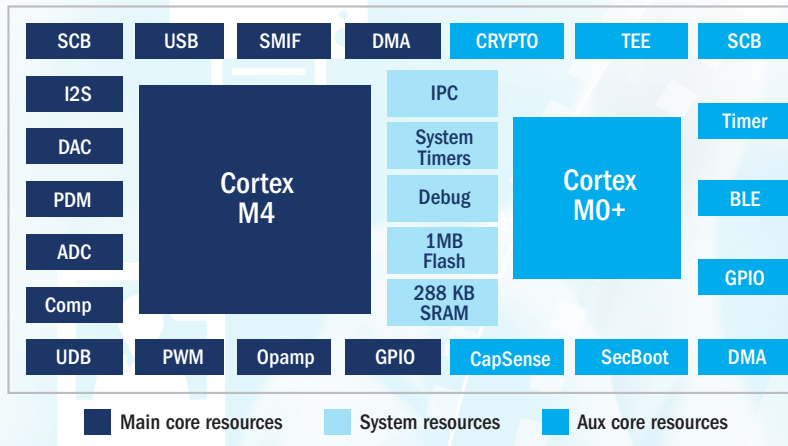
From the entrepreneur building a revolutionary new product in a garage to the Fortune 500 engineering team tasked with making the impossible happen now, Cypress is today's technology partner for tomorrow's innovations.





# PURPOSE-BUILT FOR THE INTERNET OF THINGS

## PSoC 6 Dual-Core MCU Architecture



### Ultra-Low Power

IoT devices are often battery powered, making battery life a critical factor. The PSoC 6 MCU architecture is built on cutting-edge, ultra-low-power, 40-nm process technology, and provides two ARM® Cortex-M® cores. Active power consumption is as low as 22- $\mu$ A/MHz for the M4 core, and 15- $\mu$ A/MHz for the M0+ core. PSoC 6 delivers extended battery life without sacrificing performance.



### PSoC Possibilities

The rapid growth of the IoT is sparking a need for innovation in IoT products. The PSoC 6 MCU architecture's best-in-class flexibility enables the addition of new features and addresses the need for unique IoT products with multiple connectivity options, such as USB and BLE, software-defined peripherals to create custom analog and digital circuits, and the industry's best capacitive sensing solution, CapSense®. In addition, a flexible dual-core architecture is used to optimize for system power consumption and performance. The possibilities are endless.



### Security

With more devices becoming connected to the IoT, cybersecurity becomes an important issue to address. Secured connections must be established between hardware, cloud applications and servers, and finally users and services. The PSoC 6 MCU architecture supports multiple, simultaneous secure environments without the need for external memories or secure elements, and offers scalable secure memory for multiple, independent user-defined security policies, preventing your IoT device from becoming a security liability. PSoC 6 provides you with a new standard for IoT security.

# PSoC 6 PRODUCT LINE-UP

## PSoC 63 CONNECTIVITY LINE

- Dual-core ARM Cortex®-M0+ and Cortex®-M4 Architecture
- Software-defined peripherals
- Integrated Bluetooth® Low Energy Options
- WICED® Wi-Fi and Bluetooth support
- Full Trusted Execution Environment



## PSoC 65 MOTOR CONTROL LINE

- Dual-core ARM Cortex®-M0+ and Cortex®-M4 Architecture
- Software-defined peripherals
- Production-ready Motor Control Libraries
- Functional Safety and Class B Safety Certifications



## PSoC 60 VALUE LINE

- Single-core ARM Cortex®-M4 Architecture
- Secure Flash memory
- CapSense for button replacement



## PSoC 61 PROGRAMMABLE LINE

- Single-core ARM Cortex®-M4 Architecture
- Software-defined peripherals
- Cryptographic coprocessor
- Advanced CapSense



## PSoC 62 PERFORMANCE LINE

- Dual-core ARM Cortex®-M0+ and Cortex®-M4 Architecture
- Software-defined peripherals
- Full Trusted Execution Environment
- Advanced CapSense



# PSoC 6 SOLVES PROBLEMS

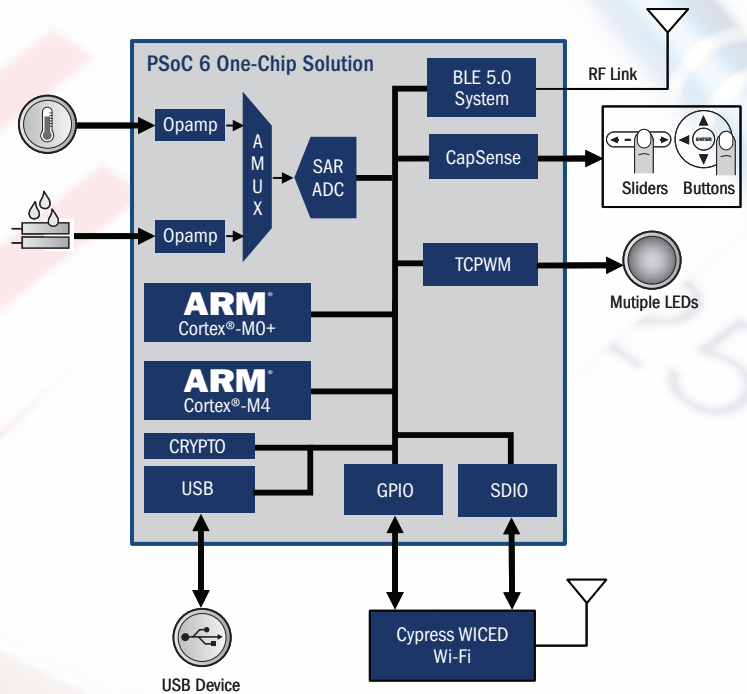
## FLEXIBLE CONNECTIVITY

### Problem

We need an MCU for a new home appliance line that will include a “smart” version that connects to a cloud application.

### Solution

PSoC 6 Connectivity MCUs can aggregate multiple environmental sensors, plus provide Cypress’ industry-leading CapSense technology for mechanical button replacement and liquid level detection. BLE and USB are integrated, plus an external Cypress WICED Wi-Fi device can be attached as an option.



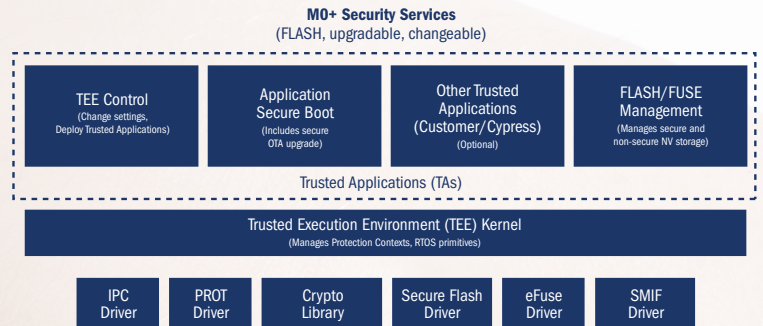
## SCALABLE SECURITY

### Problem

We are a home automation firm that offers cloud-based access to our customers. We are looking for an integrated security solution to protect our products against cyber-attacks.

### Solution

PSoC 6 MCUs offer support for multiple, simultaneous secure environments with isolated secure data storage. These features can be used to create a security architecture that supports the application, the cloud platform, and the network connection all within a single chip.



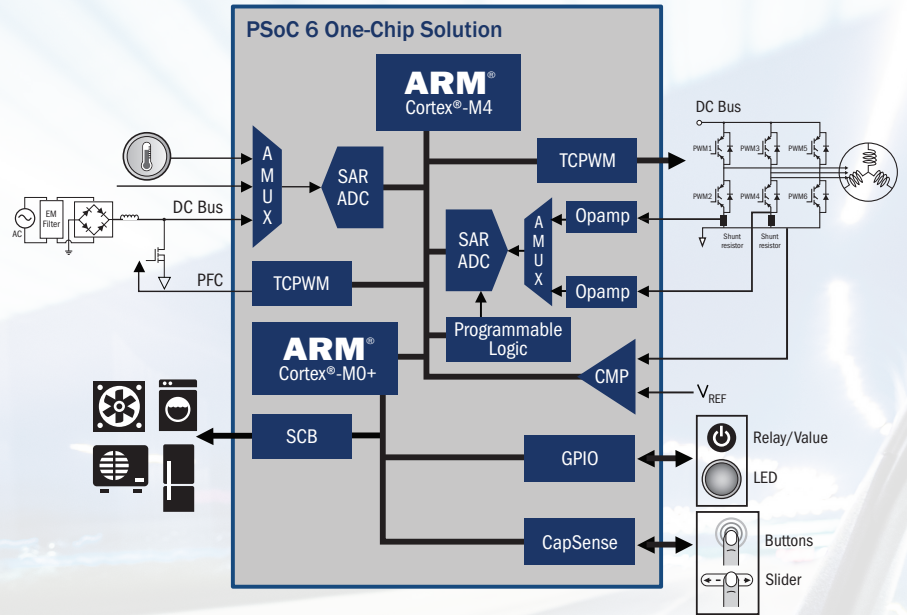
## EFFICIENT, HIGH-PERFORMANCE MOTOR CONTROL

### Problem

I would like to develop a reliable, energy-efficient motor control system that meets my safety requirements.

### Solution

PSoC 6 Motor Control MCUs, along with libraries and components provided by Cypress, make it easy to implement advanced, high performance motor control solutions that meet safety requirements.



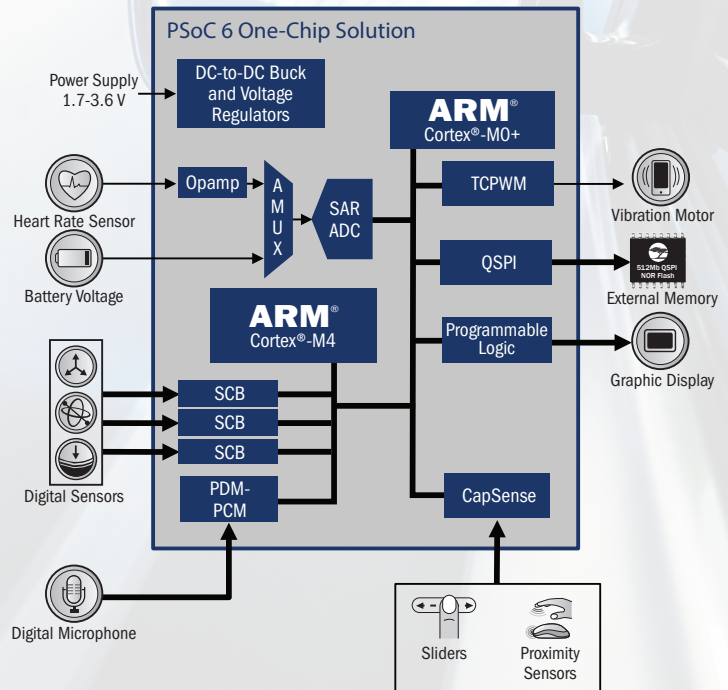
## SINGLE-CHIP HMI PLATFORM

### Problem

My company is designing a small wearable health monitor. It is very small, and I must somehow provide a user interface that includes voice.

### Solution

PSoC 6 Performance MCUs offer CapSense technology that can eliminate mechanical buttons and support simple gestures. Sensors for heart rate and temperature can be easily connected. Optionally, an external wireless connectivity device can be used.



## PSOC 6: PURPOSE BUILT FOR THE IOT

### Ultra-Low-Power Performance

- Advanced ULP 40-nm process
- Integrated Buck converter and LDO regulator
- Dynamic voltage and frequency scaling (DVFS with PLL/FLL)
- Active power as low as 15- $\mu$ A/MHz (M0+)
- 150-MHz ARM<sup>®</sup> Cortex<sup>®</sup>-M4 and 100-MHz ARM<sup>®</sup> Cortex<sup>®</sup>-M0+
- Embedded SONOS Flash with SRAM and DMA

### PSoC Possibility

- Software-Defined Peripherals
- Opamps, low-power comparators (CMP)
- 12-bit SAR ADC, 12-bit DAC
- Industry-leading CapSense<sup>®</sup>
- 16-bit and 32-bit Timer, Counter, PWM
- XIP Quad-SPI
- Serial Communication Blocks (SCBs)
- I2S and PDM-PCM converter, Serial Memory Interface (SMIF)
- Bluetooth 5.0 radio with 2-Mbps data throughput

### Scalable Security

- Secure Boot
- Hardware-based Trusted Execution Environment (TEE) with secure data storage
- Advanced cryptographic accelerator block supports ECC, AES128, SHA1/2/3

## BE A GAME-CHANGER. STAY INFORMED.

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get application notes, software and support.*

[www.cypress.com/PSoC6](http://www.cypress.com/PSoC6)

### ABOUT CYPRESS

Founded in 1982, Cypress is the leader in advanced embedded system solutions for the world's most innovative automotive, industrial, home automation and appliances, consumer electronics and medical products. Cypress's programmable systems-on-chip, general-purpose microcontrollers, analog ICs, wireless and USB-based connectivity solutions and reliable, high-performance memories help engineers design differentiated products and get them to market first. Cypress is committed to providing customers with the best support and engineering resources on the planet enabling innovators and out-of-the-box thinkers to disrupt markets and create new product categories in record time. To learn more, go to [www.cypress.com](http://www.cypress.com).

