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MCU Family Targets Motor Control And Power Conversion Applications

Infineon Technologies' PSOC Control family of microcontrollers (MCUs) is designed for next-generation industrial and consumer motor control as well as power conversion system applications. This includes home appliances, power tools, renewable energy products, industrial drives, and lighting and computing/telecom power supplies. Based on the Arm Cortex -M33 core, the Infineon PSOC Control family delivers on-board functionality to optimize and accelerate the current measurement, waveform generation and real-time performance operations that play a critical role in target system applications.

Key specifications of the MCU family include a clock speed of up to 180 MHz, high-performance ADCs, high-resolution (<100 ps) pulse-width-modulation (PWM) and an integrated CORDIC Accelerator to off-load real-time control tasks from the CPU. CORDIC's true synchronous "idle" sampling of up to 16 analog signals from the single-core ADC is up to 25% faster without sampling jitter. This powerful combination of power and performance yields system level bill-of-material (BOM) savings, while the <10-µA deep sleep and <1-µA hibernate modes deliver energy savings for low-power and battery-driven applications.

The Infineon PSOC Control family supports innovative design of power electronics based on wide-band gap (WBG) technologies such as SiC and GaN, which can both enhance performance and further reduce BOM costs for the overall system. As with all of the company's MCUs, the Infineon PSOC Control family is supported in ModusToolbox software—a modular, extensible development ecosystem that includes building blocks for both product evaluation and production. These include blocks for field-oriented control (FOC) of brushless and permanent magnet motors, power conversion algorithms (PFC, LLC, buck, etc.) and device drivers. Evaluation boards, system reference designs, debuggers and a comprehensive family of PC-based development tools round-out the ModusToolbox software to provide a flexible and comprehensive development experience.

To enable designers to get to market faster, the ModusToolbox Motor Suite is also supported for all devices in the PSOC Control family. This suite includes a compilation of software, tools, and resources that extends the capabilities of the ModusToolbox ecosystem to support motor control applications. The ModusToolbox Motor Suite reduces the complexity of these use cases through a systematic development flow to support advanced motor control development kits, selection of control algorithms, and to enable the testing, tuning, and monitoring of motor parameters.

The first two MCUs in the Infineon PSOC Control family—with CPU clock speeds of 100 MHz and 180 MHz and up to 256 KB embedded flash—are now available for early access customers, with full market availability in Q1 2025. For more information, see the PSOC Control page.

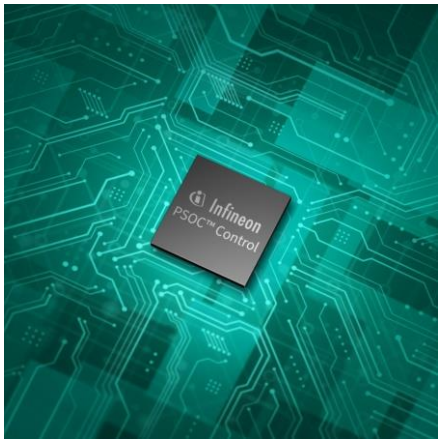

Figure. Based on the Arm Cortex -M33 core, the Infineon PSOC Control family delivers on-board functionality to optimize and accelerate the current measurement, waveform generation and real-time performance operations that play a critical role in the targeted industrial and consumer applications.