

PSOC™ Control C3 Performance Line

Best-in-class performance through high control loop frequency, accuracy and system efficiency

PSOC™ Control family of MCUs is specifically developed for advanced motor control and power conversion applications. This Performance Line features an Arm® Cortex®-M33 MCU with a Programmable Power Control Accelerator (PPCA) with Dual Cortex®-M33. Typical applications include power conversion in AI server PSUs, telecom PSUs, industrial, solar, SMPS, EV charging, and robotics, enabling designers to innovate, solve complex design problems and speed up a system design cycle.

Real-time control

PSOC™ Control Performance Line enables precise control in power conversion applications with its PPCA's 200MHz two independent Cortex®-M33, 12-bit/25-MSPS SAR ADC, the built-in 24-channel sample-and-hold functions and feature-rich timer/counter/PWM (TCPWM) blocks, hardware filters, and other PPCA features.

Wide bandgap ready for higher system efficiency

PSOC™ Control's unique ADCs allow idle sampling to boost system performance by minimizing time delay between sampling and conversion. With less than 100 picoseconds of resolution, the HRPWMs provide clean signal generation. Utilizing dual core architecture for control of each current and voltage in each core in PPCA, allows for power system designs up to 2MHz switching frequency. Being wide bandgap ready, PSOC™ Control enables high system efficiency with lower conduction and switching losses with optimized BOM.

Advanced security and safety

PSOC™ Control Performance Line is PSA Certified™ Level 3 and Post Quantum Cryptography (PQC) ready. It enables secure on-site and cloud-based designs. For critical applications, robust safety is ensured with features such as Class B/SIL 2 safety libraries.

Ease-of-use for developers

PSOC™ Control is supported by [ModusToolbox™](#), a unified ecosystem platform with tools and software solutions. ModusToolbox™ [Power Suite](#) is available for developers of PSOC™ Control focused power applications. It provides a seamless graphical user interface (GUI) that streamlines evaluation and training and provides real-time parameter monitoring for valuable insights into performance, efficiency, and reliability. Specialized application environments enable engineers to quickly identify issues, optimize designs, and enhance overall functionality.

Find out more about [PSOC™ Control Performance Line](#).



Key features

- Up to 180 MHz Arm® Cortex®-M33 with TrustZone, DSP and FPU
- Programmable Power Control Accelerator (PPCA)
 - Dual Cortex®-M33, 200 MHz
 - 112kB SRAM
- Up to 512kB read-while-write flash with ECC
- 128kB SRAM with ECC
- 5 power modes including deep sleep and hibernate

High-performance analog

- 4x 24-ch 12-bit, 25-MSPS SAR ADC
 - 9 comparators with built-in 12-bit DAC and slope generator
 - 3p3z filter

Real-time control peripherals

- 14x 16-bit PWMs and 12x 32-bit HRPWMs
- Up to PSA L3 / EPC3 security PQC and "DICE ready"**

Class B and SIL 2 safety compliant Packages

- VQFN-48, E-LQFP-48, VQFN-64, E-LQFP-64, E-LQFP-80, E-LQFP-100

Operating Temperature

- Ta: -40°C to 115°C

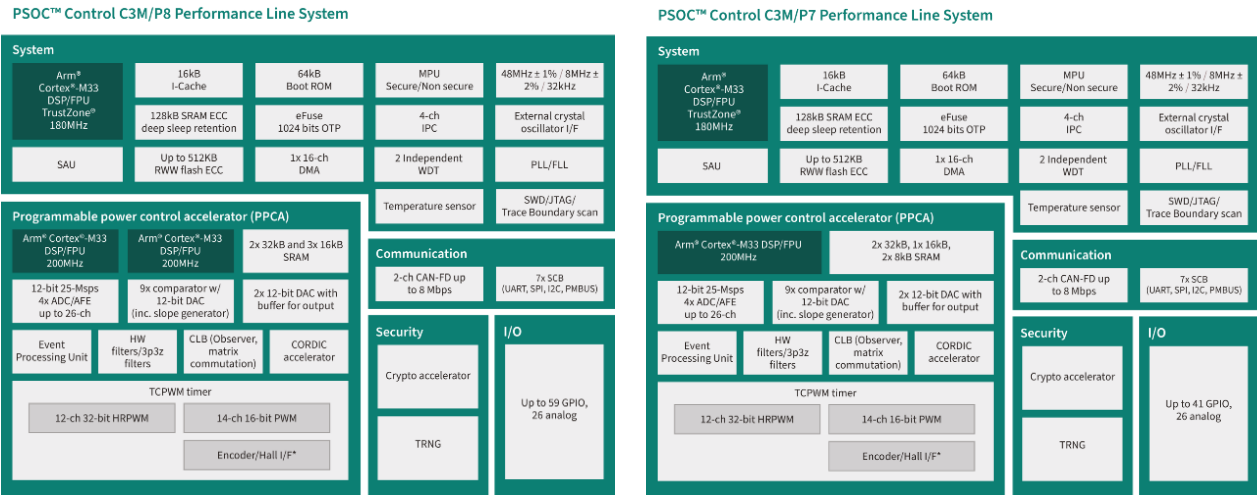
Key benefits

- Fast analog and digital peripherals ready for up to 2MHz switching frequency
- High power density applications are accelerated by use of wide-bandgap switches
- HW accelerators (dual core accelerator, filters, DSP, FPU) for real-time execution
- Power Suite with multi-functional GUI, dedicated tools, advanced libraries, etc.



PRODUCT BRIEF

Block diagram (C3M/P8 and C3M/P7)



Orderable Part Numbers and Kits

Kit	Description
KIT_PSC3M8_EVK / SP006164489	PSOC Control C3M8 Evaluation Kit
KIT_PSC3M8_CC1 / SP006164487	PSOC Control C3M8 Digital Power Control Card

Part Number	Package	PPCA TCPWM	Flash	SRAM	Analog Inputs	PSA	GPIO	Temp (Ta)
PSC3P8GFS3PAHQ1	E-LQFP-100	26 Ch (includes 12 Ch HRPWM)	512 KB	128 KB	40	L3	60	-40°C to 115°C
PSC3P8GFS3PLHQ1	VQFN-64	26 Ch (includes 12 Ch HRPWM)	512 KB	128 KB	29	L3	34	-40°C to 115°C

Additional parts can be found on [Infineon](#)

Key Applications

Power conversion	Power conversion applications in AI server PSUs, solar, SMPS, EV charging
Robotics	Vacuum cleaners, vacuum robots, service robots, industrial robotics

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