

# PSOC™ 4100T Plus Microcontrollers



## Featuring Multi-Sense technology with Enhanced Reliability and System Control

The PSOC™ 4100T Plus family of Arm® Cortex®-M0+ microcontrollers, combines analog and digital blocks with Infineon's high-performance Multi-Sense technology, which includes CAPSENSE™, Inductive Sensing and Liquid level sensing. Along with system control and HMI capabilities, the PSOC™ 4100T Plus offers enhanced reliability through 3x ESD improvements compared to other PSOC™ 4 products, it also adds 1% IMO option to improve clock accuracy to support system level synchronous communication. It supports Infineon's 5th generation CAPSENSE and Multi-Sense technology and expands the sensor inputs to 32, allowing designers to use all Multi-Sense technologies on a single chip.

The PSOC™ 4100T Plus is a highly versatile device that can be used independently as a general-purpose microcontroller unit (MCU), as a specialized human-machine interface (HMI) MCU, or as a single chip solution for system control plus touch HMI. As an HMI MCU, the PSOC™ 4100T Plus can support various sensing application, including Capacitive sensing (CAPSENSE™) for detecting finger touch or proximity, Inductive sensing for detecting the presence of metallic objects, Liquid level sensing for monitoring fluid levels, and CAPSENSE™-based hover touch for detecting proximity and gestures.

The PSOC™ 4100T Plus family is built for a variety of applications including white goods, small home appliances, touch-controlled screens, and smart connected IoT products that benefit from low power operation and improved performance to enable next generation of user experience. Its advanced HMI capabilities make it an ideal choice for use in trackpad or touchscreen applications, enabling intuitive and interactive user interfaces.

In addition, it provides an easy-to-implement upgrade path for PSOC™ 4100S and PSOC™ 4100S Plus based designs to take advantage of the 5<sup>th</sup> generation CAPSENSE™ and Multi-Sense. Designers can also upgrade from PSOC™ 4000T for more sensor inputs, and/or for higher memory requirements.

### Low-power 1.71 V to 5.5 V operation

- Deep sleep mode with 8 µA always-on touch sensing
- Autonomous sensing for low power optimization with active touch and tracking with 300 µA (average)

### 5<sup>th</sup> generation CAPSENSE™ and Multi-Sense technology

- Best-in-class signal-to-noise ratio and liquid tolerance for capacitive sensing
- “Always-on” sensing in deep sleep mode with hardware-based wake on touch detection for ultra-low power operation
- Inductive sensing for HMI over metallic surfaces, force touch and proximity sensing
- Reliable contactless liquid presence and level sensing
- Advanced proximity sensing with directivity, gesture control and CAPSENSE™ hover touch
- Infineon-supplied ModusToolbox™ middleware simplifies capacitive sensing design

### ModusToolbox™ software

- Comprehensive collection of multi-platform tools and software libraries
- Includes board support packages (BSPs), peripheral driver library (PDL), and middleware such as CAPSENSE™

For more Information visit [infineon.com/PSOC4100TPlus](http://infineon.com/PSOC4100TPlus)

[www.infineon.com](http://www.infineon.com)

### Key features

#### 32-bit MCU Subsystem

- 48-MHz Arm® Cortex®-M0+
- Up to 128KB Flash
- Up to 32KB SRAM

#### 5th Generation CAPSENSE™ and Multi-Sense

- Supports self-capacitive and mutual-capacitive sensing
- Inductive sensing, Liquid sensing and CAPSENSE™ hover touch
- Ultra-Low Power Consumption

#### Programmable Digital Blocks

- Six 16-bit timer/counter/pulse-width modulator (TCPWM) blocks
- Two serial communication blocks (SCBs) configurable as I2C, SPI, or UART
- Three UART blocks with RTS and CTS

#### 12-bit 1 MSPS ADC with 8-channel sequencer

#### I/O Subsystem

- Up to 53 GPIOs, 32 sensor inputs

#### Packages

- 48-QFN, 44/48/64 -TQFP

### Key benefits

- System control + HMI in a single chip
- Multi-sensing capabilities
- 5<sup>th</sup> Gen CAPSENSE™
- Inductive Sensing
- Liquid level sensing
- CAPSENSE™ hover touch
- Wide range of HMI options
- Low power consumption



## PRODUCT BRIEF

### Key Applications

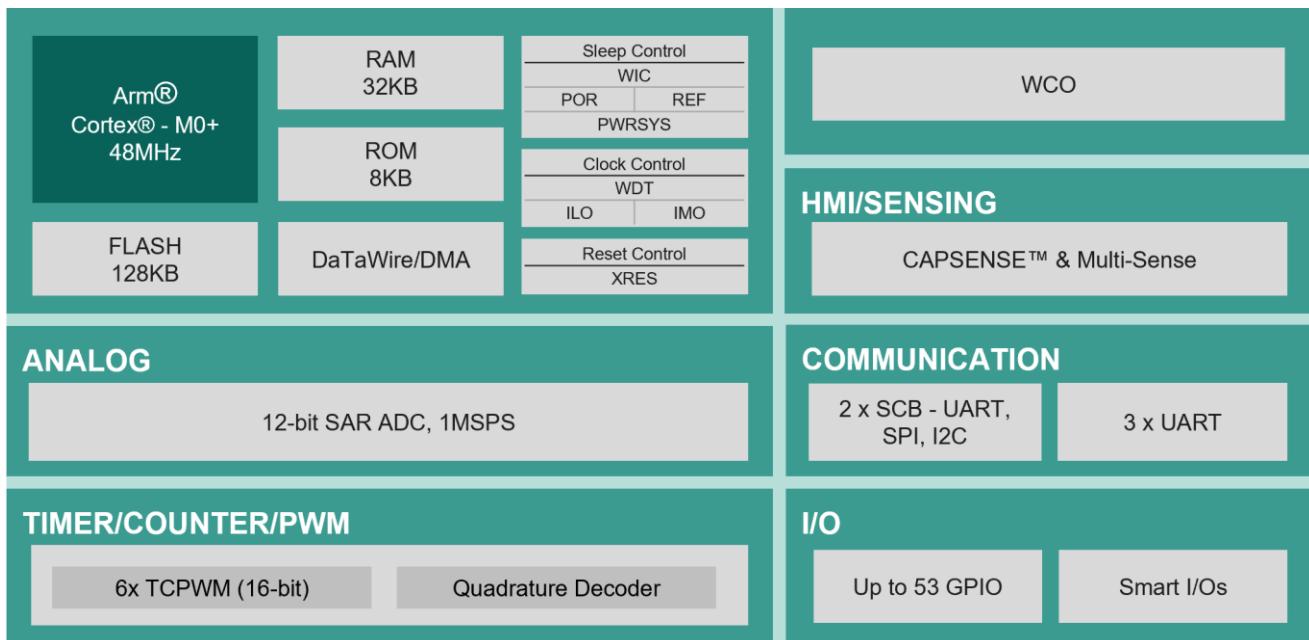
Wearables   Hearable	AR/VR glasses, smart watch, over the ear headphones
Smart Home   Appliance	White goods, countertop appliances, touch-controlled screens, smart connected IoT products
Other consumer   Industrial	PG and Gaming, consumer electronics, dimming controller, remote controls, printers, touchscreens

### Product Summary

Part Number	Max CPU Speed	Flash [KB]	SRAM [KB]	CAPSENSE	Multi-Sense Inductive Sensing	Liquid Sensing	TCPWM Blocks	SCB Blocks	GPIO	Package	Temp [C]
CY8C4147AZI-T413	48	128	16	1	0	0	6	2	38	48-TQFP	-40 to 85
CY8C4147AZI-T415	48	128	16	1	0	0	6	2	53	64-TQFP	-40 to 85
CY8C4147AZQ-T493	48	128	32	1	1	1	6	2	38	48-TQFP	-40 to 105
CY8C4147AZQ-T495	48	128	32	1	1	1	6	2	53	64-TQFP	-40 to 105

Additional parts can be found on [infineon.com/PSOC4100TPlus](http://infineon.com/PSOC4100TPlus)

### Block Diagram



[www.infineon.com](http://www.infineon.com)

Published by  
Infineon Technologies AG  
Am Campeon 1-15, 85579 Neubiberg  
Germany

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Document number: 002-41376 Rev. \*\*  
Date: 03/2025

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