



PSoC™ 4000T Microcontroller

Low-power capacitive sensing solution with unsurpassed signal-to-noise ratio, liquid tolerance, and multi-sense capabilities.

The PSoC™ 4000T family of Arm® Cortex®-M0+ microcontrollers feature Infineon’s latest 5th generation high-performance CAPSENSE™ technology, providing a 10x higher signal-to-noise ratio (SNR) performance and a 10x lower power consumption than the previous generation of the CAPSENSE™ technology. The PSoC™ 4000T features always-on touch sensing capability that enables HMI operation with low active and standby power consumption supporting longer battery life for battery powered products.

The PSoC™ 4000T family includes standard communication, timing peripherals, 5th generation CAPSENSE™ and multi-sense HMI technology built for a variety of low power applications including wearables, hearables, and smart connected IoT products. In addition, it provides an easy-to-implement upgrade path for PSoC™ 4000- and PSoC™ 4000S-based designs to take advantage of the 5th generation CAPSENSE™ with software and package compatibility.

Low-power 1.71 V to 5.5 V operation

- Deep sleep mode with 6 µA always-on touch sensing
- Active touch detection and tracking with 200 µA (average)
- 5th generation CAPSENSE™ 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
 - Autonomous sensing for low power optimization with active touch detection and tracking
 - Advanced proximity sensing with directivity and gesture control
 - Infineon-supplied ModusToolbox™ middleware software makes capacitive sensing design easy.
- 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™
- Industry-standard tool compatibility

For more Information visit infineon.com/PSoC4000T

Key features

- 32-bit MCU Subsystem
 - 48-MHz Arm® Cortex®-M0+
 - 64KB flash and 8KB SRAM
- 5th Generation CAPSENSE™
 - Up to 16 sensor inputs
 - Supports self-capacitive and mutual-capacitive sensing
 - Ultra-Low Power Consumption
- Programmable Digital Blocks
 - Two 16-bit timer/counter/pulse-width modulator (TCPWM) blocks
 - Two serial communication blocks (SCBs) that are configurable as I2C, SPI, or UART
- I/O Subsystem
 - Up to 21 GPIOs, including 16 sensor inputs
- Packages
 - 25-WLCSP, 24-QFN, 16-QFN

Key benefits

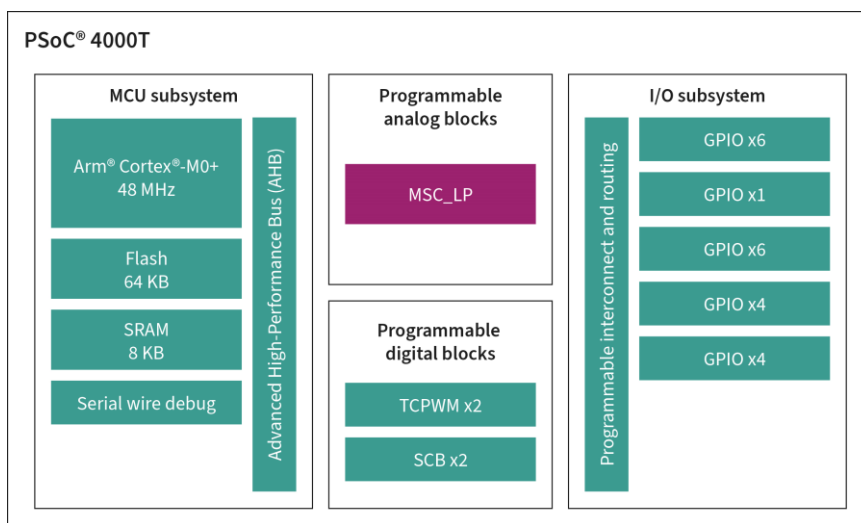
- Multi-sensing capabilities
- 10x higher SNR
- 10x lower power consumption
- Wide range of HMI options
- Long Range Proximity with Gestures
- Liquid Tolerant Performance
- Glove Touch

Key Applications

Wearables	Wear Detection, Touchscreen, Slider, TP-Gestures
Hearables	Wear Detection, Touch Button, Slider, TP-Gestures
Smart Home devices	Proximity Wakeup (Backlight), Touchscreen, Capacitive Keypad, Slider, Trackpad
Other consumer applications	Proximity Wakeup (Backlight), Touchscreen, Capacitive Keypad, Slider, Trackpad, Liquid Level Sense

Product Summary

PN	Max CPU Speed	Flash [KB]	SRAM [KB]	CAPSENSE	TCPWM Blocks	SCB Blocks	GPIO	Package	Temp [C]
CY8C4025LQI-T412	24 MHz	32	4	1	2	2	19	24-QFN	-40 to 85
CY8C4025LQI-T411	24 MHz	32	4	1	2	2	11	16-QFN	-40 to 85
CY8C4025FNI-T412T	24 MHz	32	4	1	2	2	21	25-WLCSP	-40 to 85
CY8C4045LQI-T412	48 MHz	32	4	1	2	2	19	24-QFN	-40 to 85
CY8C4045LQI-T411	48 MHz	32	4	1	2	2	11	16-QFN	-40 to 85
CY8C4045FNI-T412T	48 MHz	32	4	1	2	2	21	25-WLCSP	-40 to 85
CY8C4026LQI-T412	24 MHz	64	8	1	2	2	19	24-QFN	-40 to 85
CY8C4026LQI-T411	24 MHz	64	8	1	2	2	11	16-QFN	-40 to 85
CY8C4026FNI-T412T	24 MHz	64	8	1	2	2	21	25-WLCSP	-40 to 85
CY8C4046LQI-T412	48 MHz	64	8	1	2	2	19	24-QFN	-40 to 85
CY8C4046LQI-T411	48 MHz	64	8	1	2	2	11	16-QFN	-40 to 85
CY8C4046FNI-T412T	48 MHz	64	8	1	2	2	21	25-WLCSP	-40 to 85
CY8C4046LQI-T452	48 MHz	64	8	1	2	2	19	24-QFN	-40 to 85
CY8C4046LQI-T451	48 MHz	64	8	1	2	2	11	16-QFN	-40 to 85
CY8C4046FNI-T452T	48 MHz	64	8	1	2	2	21	25-WLCSP	-40 to 85



www.infineon.com

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

© 2023 Infineon Technologies AG
 All rights reserved.

Document number: 002-38755 Rev. **
 Date: 09/2023

Please note!

This Document is for information purposes only and any information given herein shall in no event be regarded as a warranty, guarantee or description of any functionality, conditions and/or quality of our products or any suitability for a particular purpose. With regard to the technical specifications of our products, we kindly ask you to refer to the relevant product data sheets provided by us. Our customers and their technical departments are required to evaluate the suitability of our products for the intended application.

We reserve the right to change this document and/or the information given herein at any time.

Additional information

For further information on technologies, our products, the application of our products, delivery terms and conditions and/or prices, please contact your nearest Infineon Technologies office (www.infineon.com).

Warnings

Due to technical requirements, our products may contain dangerous substances. For information on the types in question, please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by us in a written document signed by authorized representatives of Infineon Technologies, our products may not be used in any life-endangering applications, including but not limited to medical, nuclear, military, life-critical or any other applications where a failure of the product or any consequences of the use thereof can result in personal injury.