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

<table>
<thead>
<tr>
<th>Wearables</th>
<th>Wear Detection, Touchscreen, Slider, TP-Gestures</th>
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<tr>
<td>Hearables</td>
<td>Wear Detection, Touch Button, Slider, TP-Gestures</td>
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<td>Smart Home devices</td>
<td>Proximity Wakeup (Backlight), Touchscreen, Capacitive Keypad, Slider, Trackpad</td>
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<td>Other consumer applications</td>
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## Product Summary

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<tr>
<th>PN</th>
<th>Max CPU Speed</th>
<th>Flash [KB]</th>
<th>SRAM [KB]</th>
<th>CAPSENSE</th>
<th>TCPWM Blocks</th>
<th>SCB Blocks</th>
<th>GPIO</th>
<th>Package</th>
<th>Temp [C]</th>
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### PSoC® 4000T

- **MCU subsystem**
  - Arm® Cortex®-M0+ 48 MHz
  - Flash 64 KB
  - SRAM 8 KB
  - Serial Wire Debug
  - Advanced High-Performance Bus (AHB)

- **Programmable analog blocks**
  - MSC LP

- **Programmable digital blocks**
  - TCPWM x2
  - SCB x2

- **I/O subsystem**
  - GPIO x6
  - GPIO x1
  - GPIO x6
  - GPIO x4
  - GPIO x4

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