



# Smart home appliances – PSoC™ touch-sensing technology

February 2023



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# The challenge: Making smart products is hard

## Creating a delightful user experience

- › 100% of consumers want smart-home products and services that make life safer and easier
- › Small shift in customer reviews has a large impact on sales
- › "One positive star on Amazon increases sales by 20%"



### Better experience and easier products

100%



## Improving connectivity of your products

- › "60% of consumers fail to onboard smart home devices"
- › On average, 40% of onboarding failures last between 8 min – 60 min
- › Most customers give up trying to connect their device after 2 failed attempts



### Connectivity problems

60%



## While reducing costs

- › "43% of organizations fail to finish a project within the original budget"
- › "Number of product managers who want more resources for their projects: 100%"



### Fail to finish on budget

43%



# Core capabilities to solve key design challenges

## Intuitive Sensing Capabilities

Intuitively sensing the environment as with human-like senses for a more meaningful contextual awareness. **Ubiquitous sensors** mark the "point of beginning" of the IoT, picking up meaningful data from the environment surrounding an IoT edge device.

## Reliable Connectivity

Providing **stable and secure connections** at lowest power consumption  
Wi-Fi, Bluetooth and BLE  
USB / USB-C.

## Trusted Security

**Security solutions** shield connected systems and devices and protect personal privacy, intellectual property and public safety. Comprehensive security portfolio from dedicated security hardware to integrated solutions.

## Flexible Processing

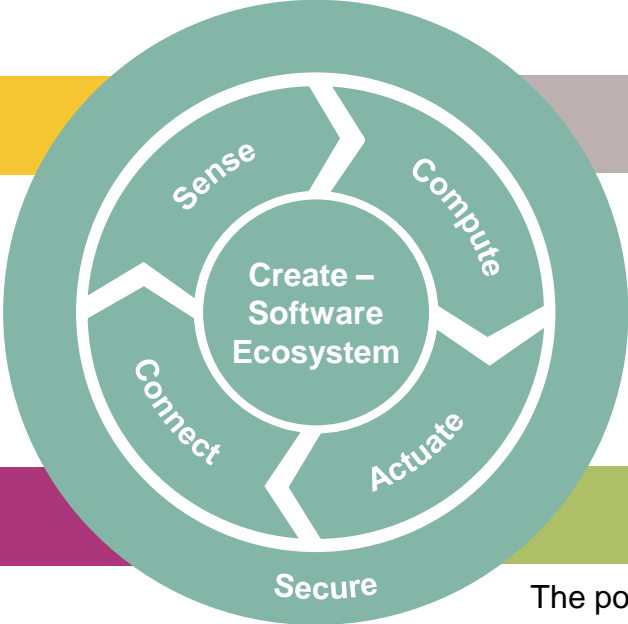
Microcontrollers are the **brain of IoT systems**. They control and instruct IoT devices by collecting, coordinating, processing, analyzing, and communicating data – thus making them "**smart**" at lowest power consumption.

## Complete Software Ecosystem

For easy implementation of complete IoT systems: Embedded software development tools for flexible configuration, fast and easy programming of microcontrollers, implementation of cloud services, (OTA updates and data security); (Connectivity SDKs).

## Efficient Power Management

The power supplied is constantly managed smartly and efficiently. Lights, temperature and movements are controlled and actuated by intelligent power management together with power semiconductors.





# Infineon is the ideal partner for innovative Smart Home IoT Solutions



Helping customers bring high-quality, differentiated smart home products to market on time, on budget, with low risk



**Best-in-class HMI**



**High Performance Bluetooth**



**Secure & Reliable Wi-Fi**



**Low-Power Secure MCU**



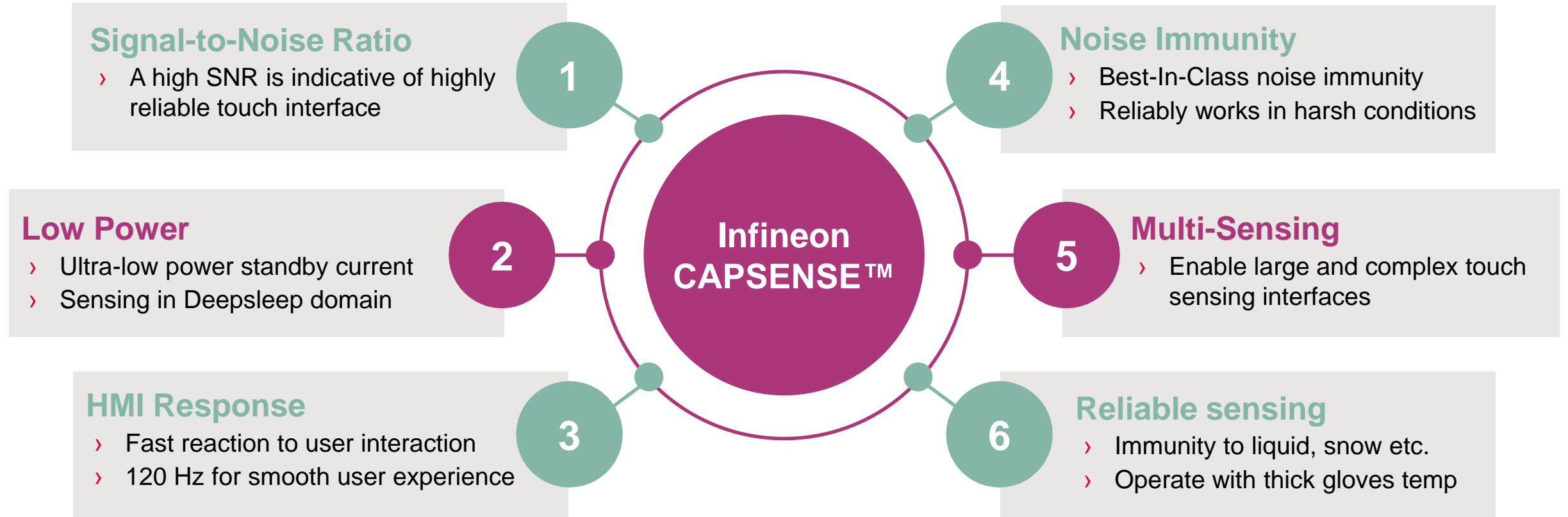
**Innovative Sensing**

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# The Infineon Solution: CAPSENSE™ Touch-Sensing Technology





# Infineon: Trusted partner in Touch HMI Solutions

**Top 1**

Touch HMI Solution

**6+ Billion**

Conventional Buttons replaced

**Patents**

100+ Touch Patents

## Touch HMI Market Size

**Touch HMI Discovery**

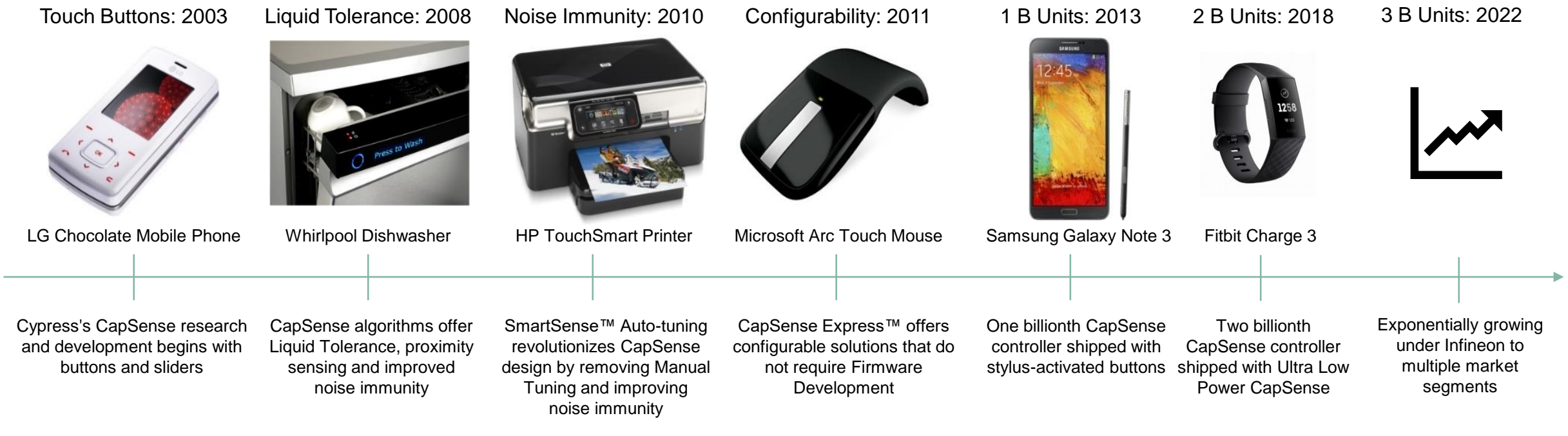
- › Touch HMI market continue to expand
- › SAM: 3 Billion by 2024
- › SOM: 1.2 Billion by 2024
- › ICW MCU PL: 140 Million chips in 2020

**Decades of Innovation & Leadership in Touch HMI Revolution**



# CapSense: Industry leading capacitive-sensing technology

- › CapSense is the industry's #1 solution in sales by 4x over No.2
- › Over three billion CapSense controllers have replaced more than six billion mechanical buttons
- › CapSense is found everywhere, including smartphones, wearables, automotive HMI, home appliances and printers

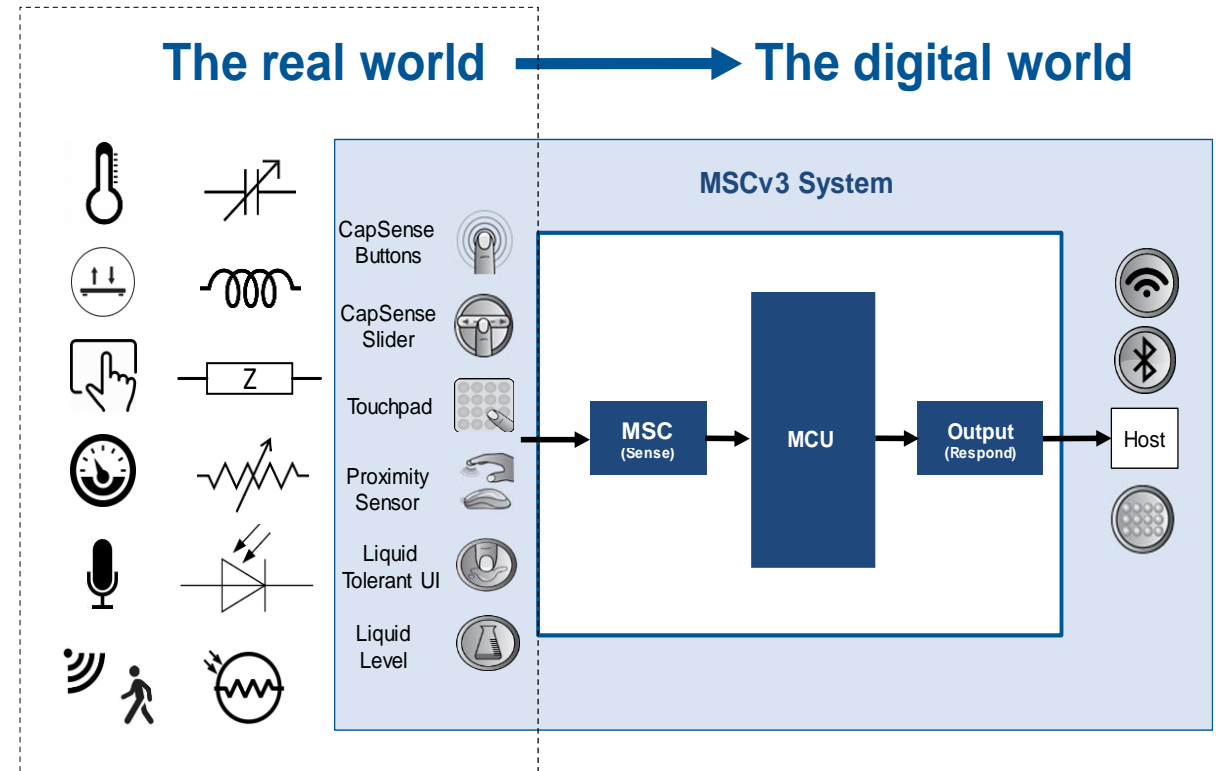


2020: Infineon introduced the next generation world leading sensing capabilities with our Multi-Sense Convertor  
More robust sensing intelligence and excellence at the edge

# Next-Generation Sensing Technology – Multi Sense Converter

## Taking world class technology today to the next level...

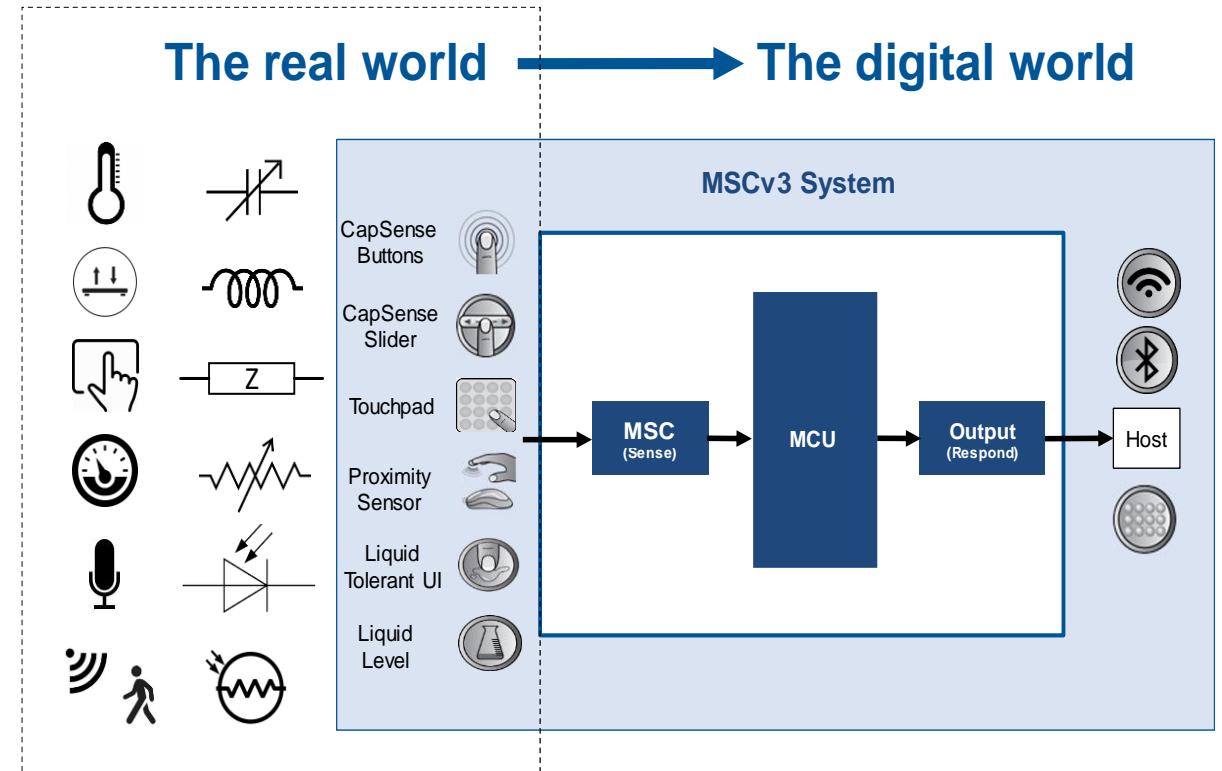
- › An improved ratio-metric architecture (Output ~ Cs/Cref)
- › Multi-Sense Converter:
  - › Capacitive sensing (Self and Mutual)
  - › Inductive sensing
  - › Sensor (Impedance, Current & Resistor)
- › **16x higher** signal-to-noise ratio performance
  - › <100aF rms noise floor for Cs=8pF
  - › Supports Cs up to 200pF
- › **10x lower** average power consumption
  - › Ultra-low power Always-ON sensing
  - › Autonomous operation without CPU
- › Enhanced Noise Immunity
  - › Differential signal path for high DC noise rejection
  - › Dithering/Chopping/CIC2/ for improved linearity/noise



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**Note: Requires two external CMOD capacitors!**

# Next Generation Sensing Technology - Comparison

Parameters	Competition	Infineon	Comment
Output Raw Count	<i>Ratio – metric</i>	$\infty \frac{C_s}{C_{ref}}$	
<b>Input dynamic range</b>	+/- 8pF	<b>200pF</b>	
<b>Converter resolution (ENOB)</b>	10-bits	<b>13.5 bits</b>	CDC with 256 decimation (3ms scan time) vs MSC no decimation.
Driven Shield	Yes	Yes – Active & Passive	Passive shield Csh < 100pF, lower power
<b>Sensing Methods</b>	Self-cap, Mutual-cap	<b>Self-cap, Mutual-Cap, Inductive, Multi-Sense</b>	Multi-Sense is flexible AFE.
Noise Immunity	Spread Spectrum Clock, Freq. Hopping	Spread Spectrum Clock, Chopping, CIC2 filter, CDAC dither, Multi-Phase	
Autonomous scan	No	Yes	Infineon: Scan without CPU, up to 32 sensors
Multi-Chip / Multi-Channel	No	Yes	
<b>Always-On Sensing</b>	No	<b>Yes (16 sensors)</b>	Sensing in Deepsleep with hardware signal detection for wakeup
<b>Average Active current</b>	3 - 4.7 mA @ 128 Hz	<b>170 uA @ 128 Hz</b>	With 13 sensors
<b>Average look-for-touch current</b>	11 - 300 uA @ 10 -128 Hz	<b>4.6 uA @ 16 Hz</b>	

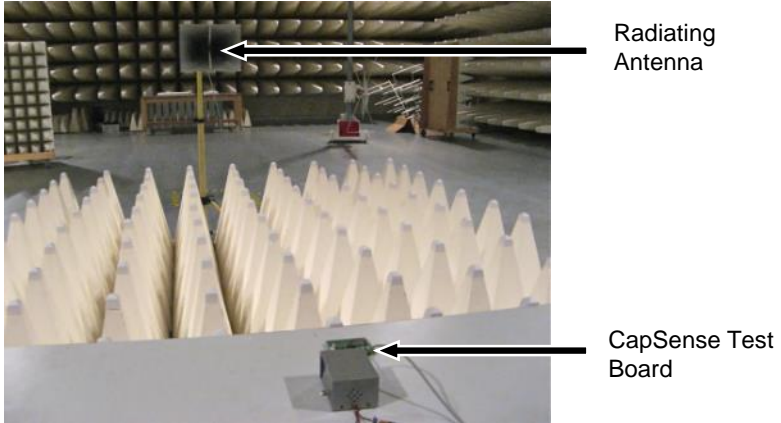
**Infineon's CapSense technology delivers the best performance and lowest system power consumption in the market!**

# PSoC MCU CapSense: "It just works"

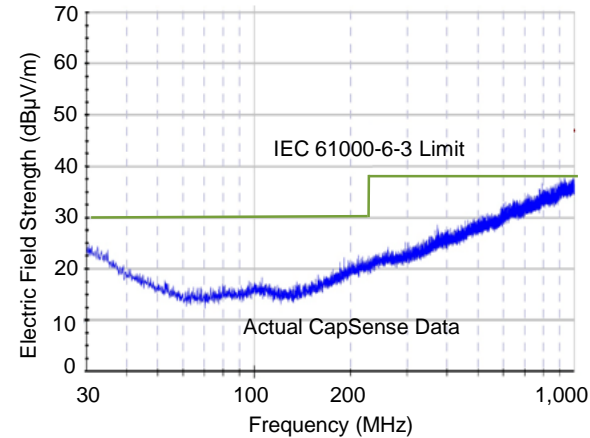
Thickness Overlay	Parasitic Capacitance	CapSense SNR (IEC Spec = 5:1)
1.0 mm (Reference)	10 pF	>150:1
2.0 mm	10 pF	>73:1
5.0 mm	10 pF	>37:1
6.0 mm	10 pF	>25:1

IEC Standard	Description	IEC Standard Requirement	CapSense
<b>61000-4-3/6-1</b>	Radiated immunity (80 MHz to 2.4 GHz)	SNR > 5:1, No false trigger, > 10 V/m	10:1 SNR, No false triggers
<b>61000-6-3</b>	Radiated emission	30.0 dBµV/m, 30-230 MHz 37.5 dBµV/m, 230-1,000 MHz	< 25 dBµV/m < 37 dBµV/m

**Radiated Immunity Test Room for CapSense EMI Testing**



**Radiated Emission Test Data**



**CapSense buttons "just work" because of rigorous engineering and testing**



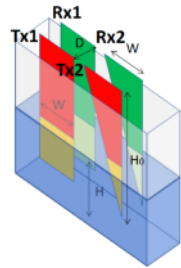
# Liquid level sensing

- › Liquid level sensing
- › Different sensing methods available
- › Several use cases analyzed with customers
- › Status: In mass production (e.g. AdBlue tanks)

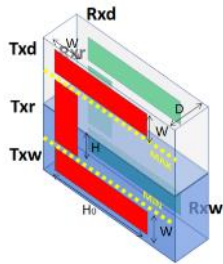
Coffee machine



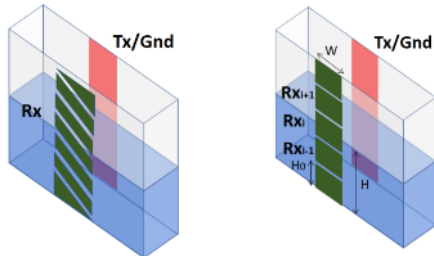
1. Ratiometric



2. Differential

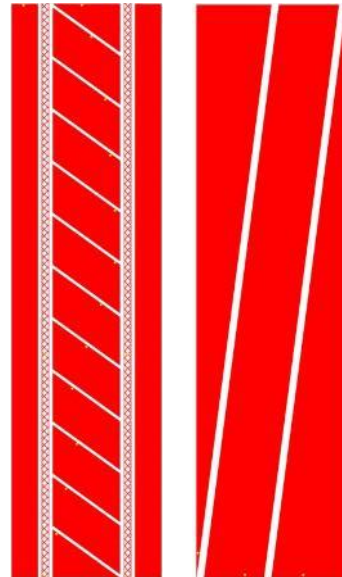


3. Centroid based



## CY8CKIT-022

- › Incl. 2 sensors and a water bottle.
- › To be combined with PSoC 4 or PSoC 6 Kit with Arduino header





# Inductive sensing applications

Button

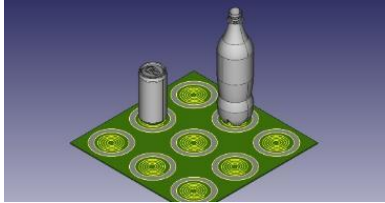
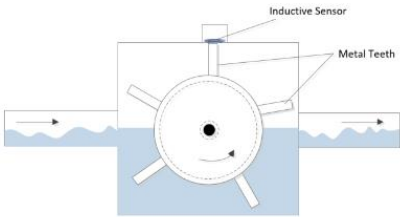
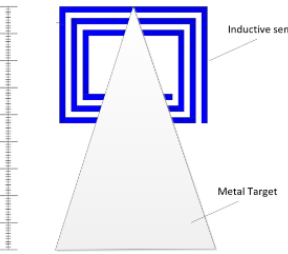
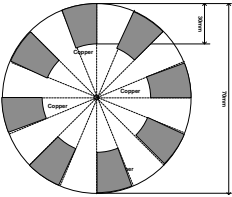
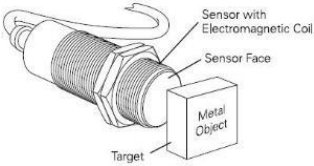
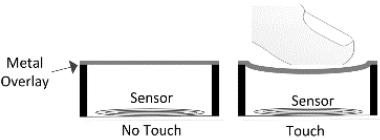
Proximity

Rotary Encoder

Linear Encoder

Flow

Hybrid Inductive & Capacitive



# Use case comparison

Category	Use cases	Capacitive			Inductive
		Self	Self + Shield	Mutual	
	# Buttons	# of I/O	# of I/O	(# TX I/O)*(#RX I/O)	0.5* (# of I/O)
Finger Touch	Touch Buttons	Yes	Yes	Yes	No
		Cp < 200 pF	Cp < 200 pF	Cp < 1000 pF	Cp not an issue
	Proximity	Ok	Yes – best performance	No	No
	Proximity Gestures	Yes		No	No
	Sliders	Yes	Yes	Yes	No
	Touchpad	Yes	Yes	Yes	No
	Touchpad Gestures	Two fingers	Two fingers	Multi-Touch	No
Liquid level sensing	Liquid level sensing	Ok performance	Ok performance	Yes – best performance	Ok with metal float
Force Sensing	Force Sensing	Ok performance	Yes	Yes	Yes
Rotary encoder	Rotary encoder	No	No	No	Yes
Metal Touch	Metal over Touch Buttons	Ok with Gnd metal	Ok with Gnd metal	No	Yes – best performance, No metal Gnd needed
	Sliders	Ok with Gnd metal	Ok with Gnd metal	No	Yes – best performance, No metal Gnd needed
	Metal Proximity	Ok with Gnd metal	Ok with Gnd metal	No	Yes – best performance, No metal Gnd needed
Waterproof	Waterproof Buttons	No	Yes	Yes	Yes
	Waterproof Sliders	No	Yes	No	Yes
# Capacitors	# Capacitors	1 (CMOD)	2 (CMOD + CSH)	2 (CMOD + CSH_TANK)	2+ #SENSORS (CMOD + CSH_TANK+ #SENSORS)
Typical Applications	Typical Applications	Mech. Button replacement Non metal proximity sensing Low-Cost Touchpad	Proximity sensing Liquid Tolerance	Multi-Touch Touchpad Touch screen Liquid level detection	Metal Buttons Rotary sensing Linear Encoding Force Sensing

■ Poor   
 ■ Ok   
 ■ Good

# Consumer/IoT: PSoC™ 6 – Ultra-Low-Power | Flexibility | Hardware-based security and root of trust



Memory and peripherals ↑

PSoC™ 61 Line Entry Level MCUs (Single Core Apps CPU - Arm® Cortex®-M4)	PSoC™ 62 Line High Performance MCUs (Dual Core Apps CPU - Arm® Cortex®-M4, Arm® Cortex®-M0+)	PSoC™ 63 Line Bluetooth® Low Energy MCUs (Dual Core Apps CPU - Arm® Cortex®-M4, Arm® Cortex®-M0+)	PSoC™ 64 Line Secured MCUs (Arm® Cortex®-M0+ - Secure CPU, Arm® Cortex®-M4 – Apps CPU)
<p><b>CY8C614A, CY8C6148</b> Flash / SRAM (614A) – 2048 KB / 1024 KB Flash / SRAM (6148) – 1024 KB / 512 KB</p> <p><b>Key Peripherals</b> – SD Host x 2, SCB x 13, PDM-PCM, I2S, TCPWM x 32, 102 IOs</p> <p><b>Packages</b> – 128-TQFP, 124-BGA, 102-WLCSP, 68-QFN</p>	<p><b>CY8C624A, CY8C6248</b> Flash / SRAM (624A) – 2048 KB / 1024 KB Flash / SRAM (6248) – 1024 KB / 512 KB</p> <p><b>Key Peripherals</b> – SD Host x 2, SCB x 13, PDM-PCM, I2S, TCPWM x 32, 102 IOs</p> <p><b>Packages</b> – 128-TQFP, 124-BGA, 102-WLCSP, 68-QFN</p>		<p><b>CY8C0644A</b> Flash / SRAM (62xA) – 1856 KB / 944 KB</p> <p><b>Key Peripherals</b> – SD Host x 2, SCB x 13, PDM-PCM, I2S, TCPWM x 32, 102 IOs</p> <p><b>Packages</b> – 124-BGA, 102-WLCSP</p>
<p><b>CY8C61x7, CY8C61x6</b> Flash / SRAM (6147) – 1024 KB / 288 KB Flash / SRAM (6146) – 512 KB / 128 KB</p> <p><b>Key Peripherals</b> – SCB x 9, PDM-PCM, I2S, 12-bit VDAC, Opamps x2, TCPWM x 32, 100 IOs</p> <p><b>Packages</b> – 124-BGA, 80-WLCSP</p>	<p><b>CY8C6247, CY8C6246</b> Flash / SRAM (6247) – 1024 KB / 288 KB Flash / SRAM (6246) – 512 KB / 128 KB</p> <p><b>Key Peripherals</b> – SCB x 9, PDM-PCM, I2S, 12-bit VDAC, Opamps x2, TCPWM x 32, 100 IOs</p> <p><b>Packages</b> – 124-BGA, 80-WLCSP</p>	<p><b>CY8C6347, CY8C6346</b> Flash / SRAM (6347) – 1024 KB / 288 KB Flash / SRAM (6346) – 512 KB / 128 KB</p> <p><b>Key Peripherals</b> – BLE v5.0, SCB x 9, PDM-PCM, I2S, 12-bit VDAC, Opamps x2, TCPWM x 32, 84 IOs</p> <p><b>Packages</b> – 124-BGA, 116-BGA, 104-M-CSP, 68-QFN</p>	<p><b>CY8C06447</b> Flash / SRAM (6347) – 832 KB / 176 KB</p> <p><b>Key Peripherals</b> – BLE v5.0, SCB x 9, PDM-PCM, I2S, 12-bit VDAC, Opamps x2, TCPWM x 32, 84 IOs</p> <p><b>Packages</b> – 124-BGA (with BLE, w/o BLE), 116-BGA (BLE only)</p>
<p><b>CY8C6145</b> Flash / SRAM – 512 KB / 256 KB</p> <p><b>Key Peripherals</b> – SD Host, CAN-FD, SCB x 6, TCPWM x 12, 64 IOs</p> <p><b>Packages</b> – 100-TQFP, 68-QFN, 49-WLCSP</p>	<p><b>CY8C6245</b> Flash / SRAM – 512 KB / 256 KB</p> <p><b>Key Peripherals</b> – SD Host, CAN-FD, SCB x 6, TCPWM x 12, 64 IOs</p> <p><b>Packages</b> – 100-TQFP, 68-QFN, 49-WLCSP</p>		<p><b>CY8C06445</b> Flash / SRAM – 384 KB / 176 KB</p> <p><b>Key Peripherals</b> – SD Host, CAN-FD, SCB x 6, TCPWM x 12, 64 IOs</p> <p><b>Packages</b> – 68-QFN</p>
<p><b>CY8C6144</b> Flash / SRAM – 256 KB / 128 KB</p> <p><b>Key Peripherals</b> – CAN-FD, 12-bit VDAC, 12-bit ADC x2, Opamps x2, SCB x 6, TCPWM x 12, 62 IOs</p> <p><b>Packages</b> – 80-TQFP, 68-QFN, 64-TQFP</p>	<p><b>CY8C6244</b> Flash / SRAM – 256 KB / 128 KB</p> <p><b>Key Peripherals</b> – CAN-FD, 12-bit VDAC, 12-bit ADC x2, Opamps x2, SCB x 6, TCPWM x 12, 62 IOs</p> <p><b>Packages</b> – 80-TQFP, 68-QFN, 64-TQFP</p>		

- Common features (All PSoC™ 6 MCUs)**
- › Arm® Cortex®-M4 CPU
  - › + Arm® Cortex®-M0+ CPU (except PSoC™ 61)
  - › Capacitive Touch Sensing
  - › Crypto Accelerator
  - › ROM based Root of Trust
  - › DMA Controllers
  - › QSPI External Flash
  - › Serial Comm (SCB) – I2C / SPI / UART
  - › Timers, Counters, PWMs (TCPWM)
  - › USB Full Speed (Device / Host)
  - › 12-bit SAR ADC x1
  - › Low Power Comparators x2
  - › Segment LCD Drive
  - › Smart I/Os

# Consumer/IoT: PSoC™ 4

## Flexibility | CapSense® | Ease-of-Use



Performance and Integration ↑

PSoC MCU PSoC 4000	Intelligent Analog PSoC 4100	Programmable Digital PSoC 4200	Analog Coprocessor PSoC 4A00	Application Specific PSoC 4500, 4700		
BL = BLE-Series		S = S-Series	M = M-Series	L = L-Series		
	<p><b>CY8C4129-S</b> <sup>Q422</sup> 24-MHz M0+, 384K/32K<sup>1</sup> CMP<sup>2</sup>, Opamp, ADC<sup>3</sup> SCB<sup>4</sup>, MSC<sup>12</sup>, Smart I/O<sup>6</sup></p> <p><b>CY8C4128-S</b> 24-MHz M0+, 256K/32K<sup>1</sup> CMP<sup>2</sup>, Opamp, ADC<sup>3</sup> SCB<sup>4</sup>, IDAC<sup>5</sup>, Smart I/O<sup>6</sup></p> <p><b>CY8C4147-S</b> 48-MHz M0+, 128K/16K CMP, Opamp, ADC SCB, IDAC, Smart I/O</p> <p><b>CY8C4127-S</b> 24-MHz M0+, 128K/16K CMP, Opamp, ADC SCB, IDAC, Smart I/O</p> <p><b>CY8C4127-M</b> 24-MHz M0, 128K/16K CMP, Opamp, ADC, SCB IDAC</p> <p><b>CY8C4126-M</b> 24-MHz M0, 64K/8K CMP, Opamp, ADC, SCB IDAC</p> <p><b>CY8C4125</b> 24-MHz M0, 32K/4K CMP, Opamp, ADC, SCB IDAC</p> <p><b>CY8C4124</b> 24-MHz M0, 16K/4K CMP, Opamp, ADC, SCB IDAC</p>	<p><b>CY8C4149-S</b> <sup>Q422</sup> 48-MHz M0+, 384K/32K CMP, Opamp, ADC SCB, MSC, Smart I/O</p> <p><b>CY8C4148-S</b> 48-MHz M0+, 256K/32K CMP, Opamp, ADC SCB, IDAC, Smart I/O</p> <p><b>CY8C4128-BL</b> 24-MHz M0, 256K/32K CMP, Opamp, ADC, SCB IDAC, BLE<sup>7</sup></p> <p><b>CY8C4127-BL</b> 24-MHz M0, 128K/16K CMP, Opamp, ADC, SCB IDAC, BLE</p> <p><b>CY8C4146-S</b> 48-MHz M0+, 64K/8K CMP, Opamp, ADC, SCB IDAC, Smart I/O</p> <p><b>CY8C41xx-PS</b> 48-MHz M0+, 32K/4K CMP, Opamp, ADC SCB, VDAC, Smart I/O</p> <p><b>CY8C4125-S</b> 24-MHz M0+, 32K/4K CMP, Opamp, ADC, SCB IDAC, Smart I/O</p> <p><b>CY8C4124-S</b> 24-MHz M0+, 16K/4K CMP, Opamp, ADC, SCB IDAC, Smart I/O</p>	<p><b>CY8C4247-M</b> 48-MHz M0, 128K/16K, CMP, Opamp, ADC, SCB IDAC, UDB<sup>8</sup>, CAN<sup>9</sup></p> <p><b>CY8C4246-M</b> 48-MHz M0, 64K/8K, CMP, Opamp, ADC, SCB IDAC, UDB</p> <p><b>CY8C4246-DS</b> 48-MHz M0, 64K/8K CMP, SCB UDB, Smart I/O</p> <p><b>CY8C4245-DS</b> 48-MHz M0, 32K/4K CMP, SCB UDB, Smart I/O</p> <p><b>CY8C4245</b> 48-MHz M0, 32K/4K CMP, Opamp, ADC, SCB IDAC, UDB</p> <p><b>CY8C4244</b> 48-MHz M0, 16K/4K, CMP, Opamp, ADC, SCB IDAC, UDB</p>	<p><b>CY8C4248-BL</b> 48-MHz M0, 256K/32K CMP, Opamp, ADC, SCB IDAC, BLE, UDB</p> <p><b>CY8C4247-BL</b> 48-MHz M0, 128K/16K CMP, Opamp, ADC, SCB IDAC, BLE, UDB</p> <p><b>CY8C4248-L</b> 48-MHz M0, 256K/32K CMP, Opamp, ADC, SCB IDAC, UDB, CAN, USB</p> <p><b>CY8C4247-L</b> 48-MHz M0, 128K/16K CMP, Opamp, ADC, SCB IDAC, UDB, CAN, USB</p> <p><b>CY8C4246-L</b> 48-MHz M0, 64K/8K CMP, Opamp, ADC, SCB IDAC, UDB, CAN, USB</p>	<p><b>CY8C4Axx</b> 48-MHz M0+, 32K/4K CMP, Opamp, UAB<sup>10</sup> ADC, SCB, VDAC Smart I/O</p>	<p><b>CY8C45xx-S</b> <b>Motor Control</b> 48-MHz M0+, 256K/32K MCA<sup>11</sup>, CMP, Opamp 2X ADC, SCB, IDAC Smart I/O, ECO</p> <p><b>CY8C47xx-S</b> <b>Inductive Sensing</b> 48-MHz M0+, 32K/4K CMP, Opamp, UAB<sup>10</sup> ADC, SCB, VDAC Smart I/O</p>
<p><b>CY8C40x-T</b> <sup>Q123</sup> 48-MHz M0+, 64 K/8 K CMP, ADC, SCB, MSC12, Smart I/O</p> <p><b>CY8C4045-S</b> 48-MHz M0+, 32K/4K CMP, ADC, SCB IDAC, Smart I/O</p> <p><b>CY8C4024-S</b> 24-MHz M0+, 16K/2K CMP, ADC, SCB IDAC, Smart I/O</p> <p><b>CY8C4014</b> 16-MHz M0, 16K/2K CMP, I<sup>2</sup>C, IDAC</p>						

<sup>1</sup> Flash KB/SRAM KB  
<sup>2</sup> Comparator  
<sup>3</sup> Analog-to-digital converter

<sup>4</sup> Serial communication block  
<sup>5</sup> Current-output DAC  
<sup>6</sup> Embedded programmable digital logic in the I/O subsystem

<sup>7</sup> Bluetooth Low Energy  
<sup>8</sup> Universal digital block  
<sup>9</sup> Controller area network

<sup>10</sup> Universal analog block  
<sup>11</sup> Motor Control Accelerator  
<sup>12</sup> Multi-sense converter

Status Availability

Concept
  Development
  Sampling
  Production

Availability
  QQQY
  QQQY

# PSoC™ 62X4 Family

## Applications

Motor and power control, LPWAN and other Consumer

## Features

- › **MCU Subsystem**
  - Dual-core architecture: 150-MHz Arm® Cortex®-M4 and 100-MHz Arm Cortex-M0+
  - Ultra-low-power (0.9 V) and low-power (1.1 V) operation mode
  - Up to 256K Flash, 128KB SRAM with DMA
- › **Analog Blocks**
  - › 2 x opamps, 2 x low-power comparators (CMP)
  - › 2x 12-bit SAR ADC (2 Msps) and 12-bit DAC, operable under deep-sleep mode
  - › CapSense® capacitive-sensing block
- › **Digital Blocks and Communication Interfaces**
  - › 8 x 16-bit and 4 x 32-bit timer/counter/pulse-width modulation blocks (TCPWM)<sup>1</sup>
  - › 5 x serial communication blocks (SCBs)<sup>2</sup>, 1x deep-sleep SCB
  - › USB 2.0 (Host and Device)
  - › SMIF (Serial memory interface for execute-in-place, encrypted Quad-SPI)
- › **Security Features**
  - › Advanced cryptographic coprocessor (Crypto) and True random number generator
  - › One-time programmable eFUSE<sup>6</sup> for secure key storage
  - › Secure over-the-air (OTA) firmware update with read-while-write Flash technology for firmware updates
- › **I/O Subsystem:** Up to 62 GPIOs
- › **Packages:** 80-TQFP, 68-QFN, 64-TQFP

## Collateral

**Datasheet:** Preliminary

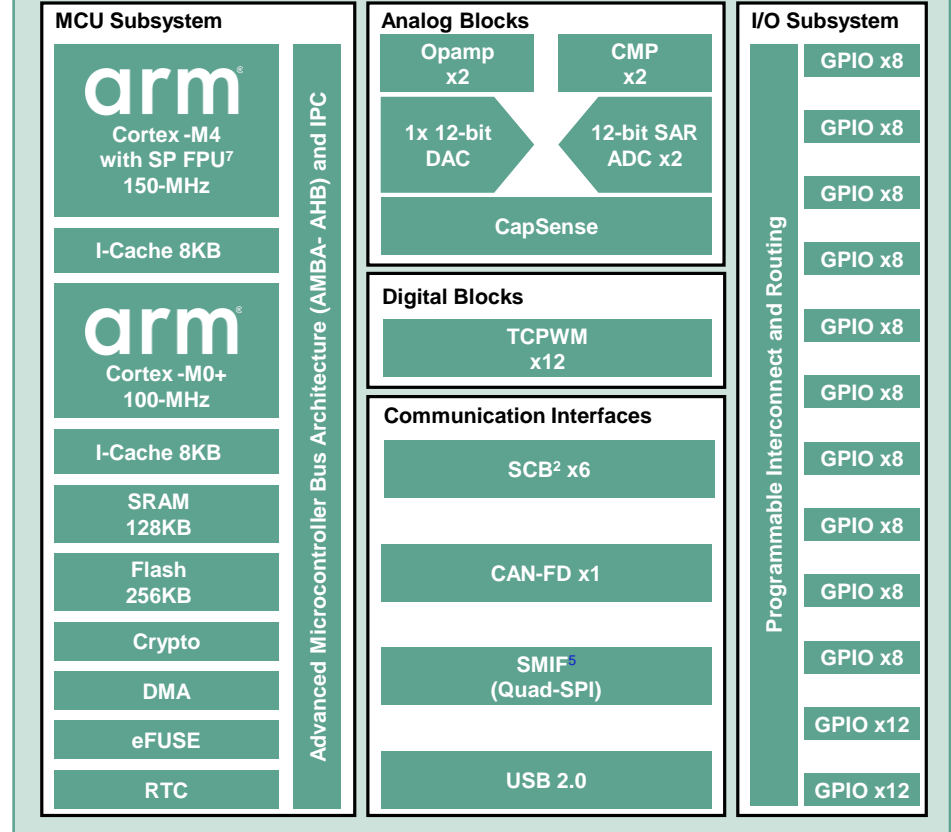
<sup>1</sup> Configurable as an 8-bit, 16-bit timer, or 32-bit counter or PWM

<sup>2</sup> Configurable as a UART, SPI, or I<sup>2</sup>C interface

<sup>5</sup> Controller Area Network

<sup>6</sup> One-time programmable bits for secure key storage

## PSoC™ 62x4 Family



## Availability

**Sampling:** Now  
**Production:** Q321

# PSoC™ 4x00T Series

## Applications

Touch controller for Wearable, Hearable, Smart devices and other consumer applications

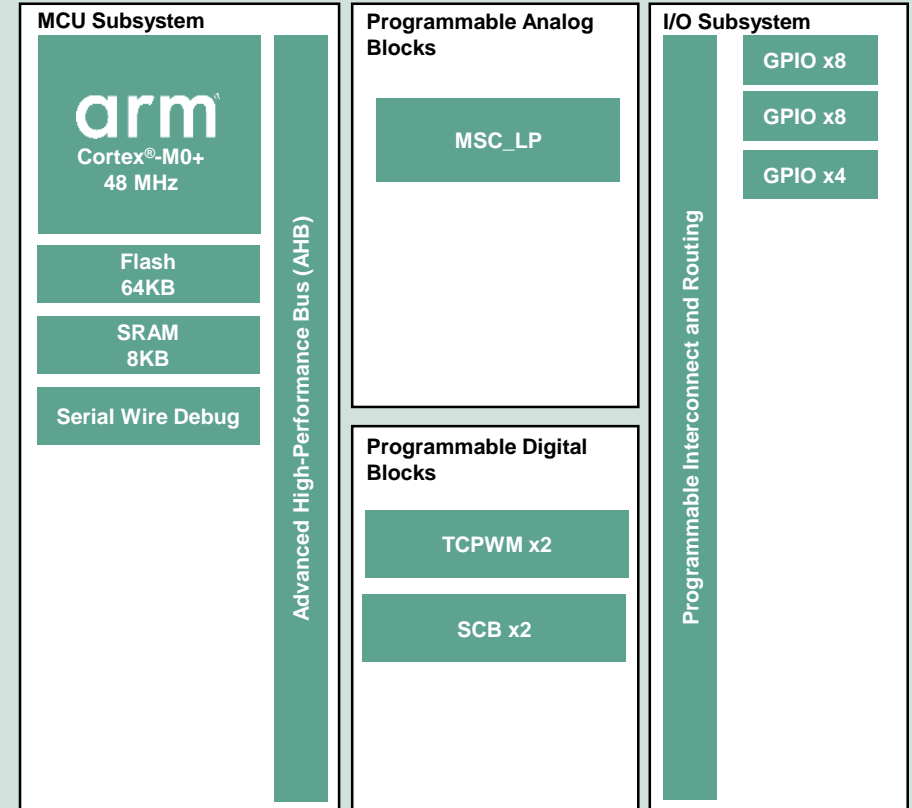
## Features

- › **32-bit MCU Subsystem**
  - 48-MHz Arm® Cortex®-M0+ CPU
  - **64KB flash and 8KB SRAM**
- › **Programmable Analog Blocks**
  - **5th-Generation CAPSENSE block (Multi Sense Converter – MSC\_LP)**
  - **Ultra-low power Always-ON sensing CapSense and Inductive sensing**
- › **Programmable Digital Blocks**
  - Two 16-bit timer/counter/pulse-width modulator (TCPWM) blocks
  - Two serial communication blocks (SCBs) that are configurable as I<sup>2</sup>C, SPI, or UART
- › **I/O Subsystem**
  - **Up to 20 GPIOs, including 16 sensors**
- › **Packages**
  - **25-WLCSP, 24-QFN, 16-QFN**

## Collateral

**Datasheet: Contact Sales**

## PSoC™ 4x00T Series



## Availability

**Sampling: Q4'2022**  
**Production: Q1'2023**



Part of your life. Part of tomorrow.