



WeDay 2026

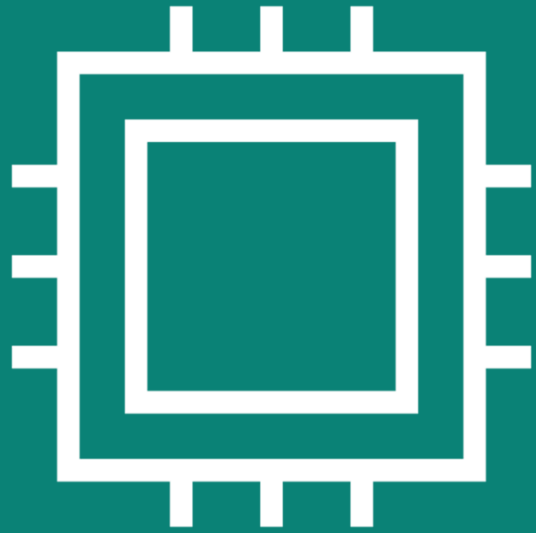
Do Bit ao Busbar

Arquiteturas Seguras para Interface Baixa–Alta Potência

Aug 2026



#1



Microcontroller

Infineon is the
market leader
in the **global**
microcontroller
market*

*Based on or includes research from Omdia: 'Annual 2001-2024 Semiconductor Market Share Competitive Landscaping Tool – 4Q24. March 2025.'

Infineon's MCU Portfolio



Auto / Functional Safety



Consumer / Industrial

MOTIX™
Cortex-M0 and M3, ASIL-B
Up to 256KB Flash
Motor Control SoC

PSOC™ Multitouch
Touch controller SoC
Touchscreen, Slider, Touchpad
Wet-finger tracking

Auto PSOC™
ASIL-B
Up to 384KB Flash
CAPSENSE

TRAVEO™ T2G
Dual Cortex-M4/M7 and M0+
ASIL-B, Up to 16MB Flash
HSM, GPU (Cluster)

AURIX™ TC4x
Up to 6x Tricore ASIL-D
Up to 24MB Flash
PPU, SRM, Lockstep, PCIe

AURIX™ TC3x
Up to 6x Tricore ASIL-D
Up to 16MB Flash
HSM, ETH, Lockstep, CAN FD

PSOC™ Fingerprint
Touch controller SoC
Capacitive fingerprint solution
Support multi-surface solution

Auto PSOC™ HV
ASIL-C
Up to 384KB Flash
Up to 42V tolerant MCU

XMC7000
Dual Cortex-M7 and M0+
Up to 350MHz and 8MB Flash
Motor and power control

PSOC™ Control C3 Performance
180MHz M33 + PPCA
25Msps ADCs
CORDIC Math co-processor

AURIX™ TC2x
Up to 3x Tricore ASIL-D
Up to 8MB Flash
HSM, ETH, Lockstep, CAN FD

PSOC™ Edge E86
400MHz M55/U55 and M33
Up to 9.5MB SRAM, 4MB NVM
Camera, GPU, Audio, Analog

XMC1000
Up to 48MHz and 200KB Flash
CORDIC Math co-processor
CCU8 timer

XMC4000
Up to 144MHz and 2MB Flash
Motor and power control
EtherCAT support

PSOC™ Control C3 Main
Up to 180MHz M33
12Msps ADCs
CORDIC Math co-processor

PSOC™ Edge E84
400MHz M55/U55 and M33
Up to 6.5MB SRAM, 0.5MB NVM
GPU, Audio, Analog

PSOC™ 4
Up to 48MHz and 384KB Flash
Industry leading CAPSENSE™
Mixed-signal functionality

PSOC™ 6
Dual Cortex-M4 and M0+
Up to 150MHz and 2MB Flash
Ultra-low-power with security

PSOC™ Control C3 Entry
Up to 100MHz M33
6Msps ADCs
CORDIC Math co-processor

PSOC™ Edge E83
400MHz M55/U55 and M33
Up to 5.5MB SRAM, 0.5MB NVM
Audio, Analog

FM0+
Up to 40MHz and 128KB Flash
Entry level USB

FM4
Up to 200MHz and 2MB Flash
High-performance motor control

PSOC™ Edge E81
400MHz M55 and M33
Up to 5.5MB SRAM, 0.5MB NVM
Audio, Analog

32-bit Arm® Cortex®-M0/M0+

32-bit Arm®
Cortex®-M4/M33/M7

32-bit TriCore™

32-bit Arm®
Cortex®-M55/M85, U55,
M33 with ML accelerators

PSOC™ 4

Your problem solver on chip

Abhijit Patil (CSS ICW MCU PMG)



PSOC™ 4000 Family

Entry-level MCU



Applications

User User interface in wearable, mobile, personal care, IoT, and small home appliances

Features

32-bit MCU subsystem

- Arm® Cortex®-M0/M0+ CPU
- Up to 32 KB flash and 4 KB SRAM
- Real-time clock capability with a watch crystal oscillator (WCO)

Programmable analog blocks

- One 10-bit, 46.8-ksps single-slope ADC¹
- Two low-power comparators (CMPs)
- One CAPSENSE™ block that supports low-power operation and mutual-capacitance sensing
- Two 7-bit current-output digital-to-analog converters (IDACs) configurable as a single 8-bit IDAC

Programmable digital blocks

- Five 16-bit timer/counter/pulse-width modulator (TCPWM) blocks
- Two serial communication blocks (SCBs) that are configurable as I²C, SPI, or UART

Packages

- 8-SOIC, 16-SOIC, 16-WLCSP, 25-WLCSP, 16-QFN, 24-QFN, 28-SSOP, 32-QFN, 32-TQFP, 40-QFN, and 48-TQFP

I/O subsystem

- Up to 36 GPIOs, including 16 Smart I/Os²

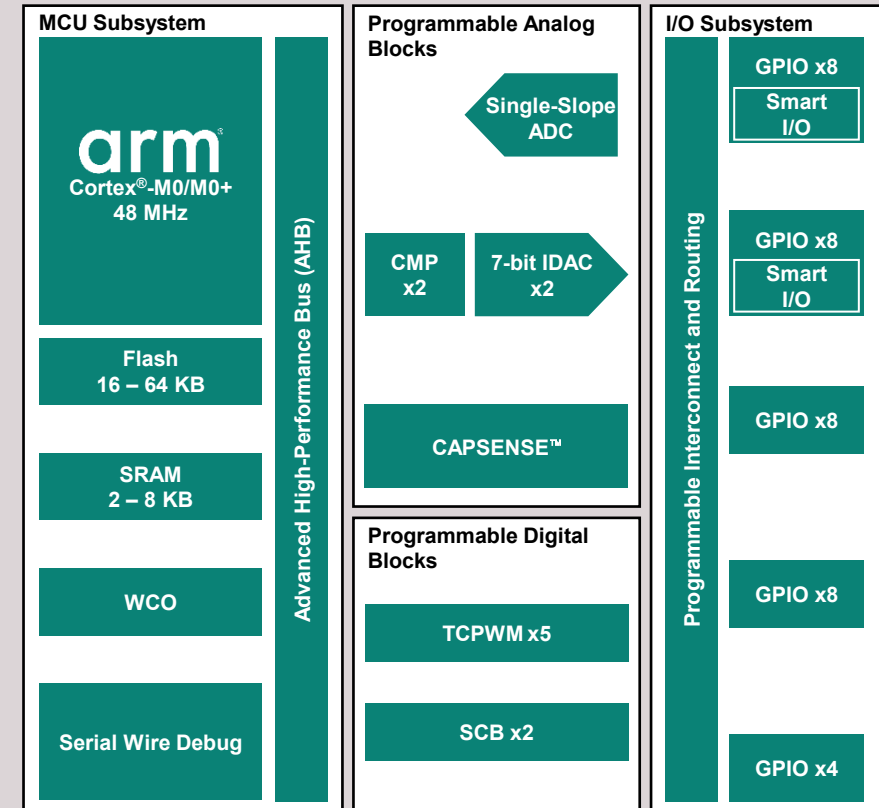
Collateral

Datasheet: [PSoC™ 4000 Product Page](#)

¹ A simple ADC used to measure slow-moving signals

² Embedded programmable digital logic in the I/O subsystem

PSOC™ 4 One-Chip Solution



Availability

	4000T	Others
Sampling:	Now	Now
Production:	Now	Now

PSOC™ 4000T

Applications

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

Features

32-bit MCU subsystem

- 48 MHz Arm® Cortex®-M0+ CPU
- 64 KB flash and 8 KB SRAM

MSC (Multi-Sense Convertor) with next-generation CAPSENSE™

- 5th Generation CAPSENSE™ sensing block
- "Always-ON" sensing enabled ultra-low power technology
- Supports self-cap, mutual-cap and inductive sensing technologies
- Supports up to 16 sensors

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 sensors

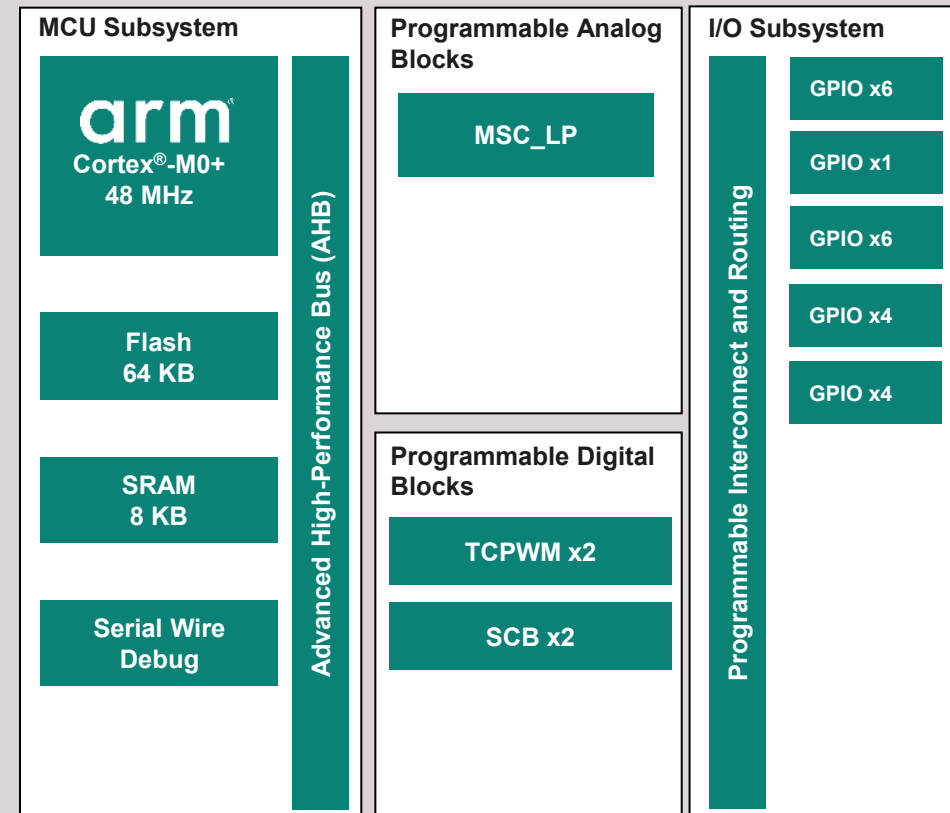
Packages

- 25-WLCSP, 24-QFN, 16-QFN

Collateral

[Datasheet](#)

PSOC™ 4000T



Availability

Sampling: Now

Production: Now

PSOC™ 4100 Family

Intelligent Analog



Applications

System control, user interfaces in wearables, home appliances, IoTs and Industrial applications

Features

32-bit MCU subsystem

- 48-MHz Arm® Cortex®-M0/M0+ CPU with a DMA controller
- Up to 384 KB flash and 32 KB SRAM
- External MHz oscillator (ECO) with PLL and 32-kHz watch crystal oscillator (WCO)
- Cryptographic coprocessor for AES, TRNG, CRA, and SHA

Programmable analog blocks

- One 12-bit, 1-Msps SAR ADC, 13-bit voltage DACs
- Opamps configurable as programmable gain amplifiers (PGAs), comparators (CMPs), etc.
- Two low-power comparators
- Up to two CAPSENSE™ blocks

Programmable digital blocks

- Eight 16-bit timer/counter/pulse-width modulator (TCPWM) blocks
- Five serial communication blocks (SCBs) that are configurable as I²C, SPI, or UART
- Segment LCD

CAN (Controller Area Network with) or CAN-FD (Flexible Data-rate) Controller

Packages: 28-SSOP, 32-QFN, 35-CSP, 40-QFN, 44-TQFP, 45-CSP, 48-QFN, 48-TQFP, 64-TQFP, 68-QFN, and 100-TQFP

I/O subsystem

- Up to 84 GPIOs, including 24 Smart I/Os

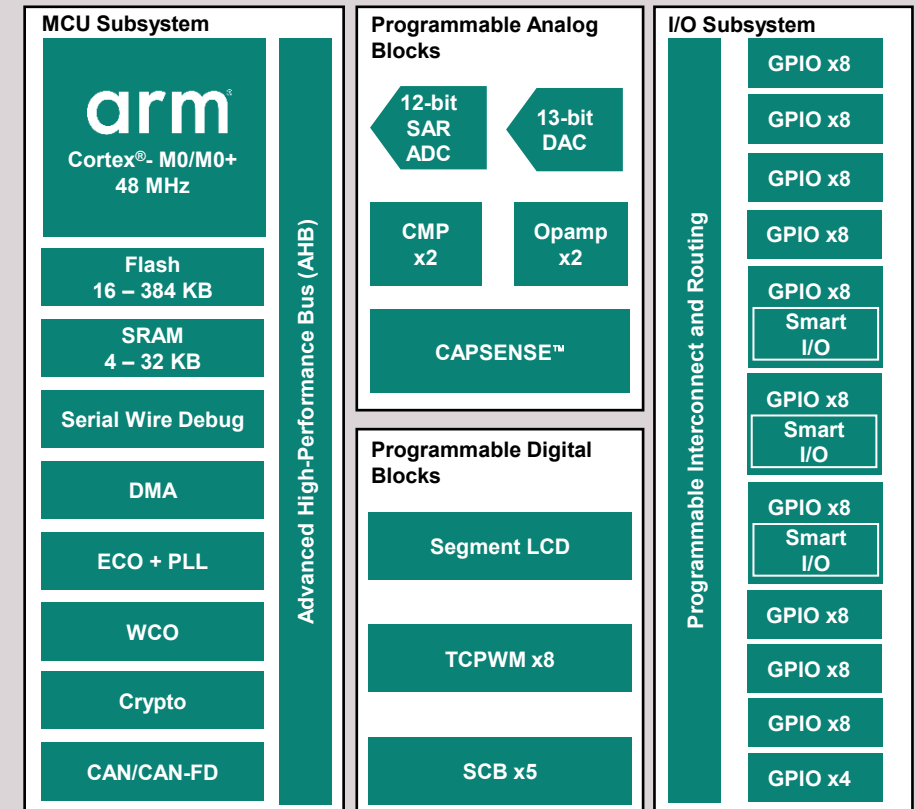
Collateral

Datasheet: [PSoC™ 4100 Product Page](#)

¹ A simple ADC used to measure slow-moving signals

² Embedded programmable digital logic in the I/O subsystem

PSOC™ 4 One-Chip Solution



Availability

	4100S Max	Others
Sampling:	Now	Now
Production:	Q421	Now

O que é o CAPSENSE™?

- › CAPSENSE™ é a tecnologia de detecção capacitiva proprietária da Infineon usada em interfaces de usuário de toque
- › O CAPSENSE™ está inovando a forma como os usuários interagem com produtos modernos
- › Essa tecnologia foi herdada por meio da aquisição da Cypress Semiconductor em 2020



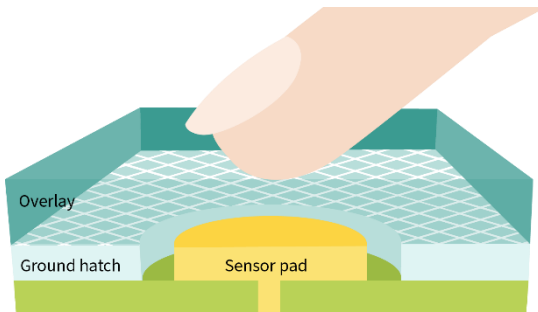
We expand leading CAPSENSE™ technology with inductive & liquid sensing

PSOC™ 4 – Multi-Sensing Technologies

Infineon PSOC™ 4 Multi-Sense

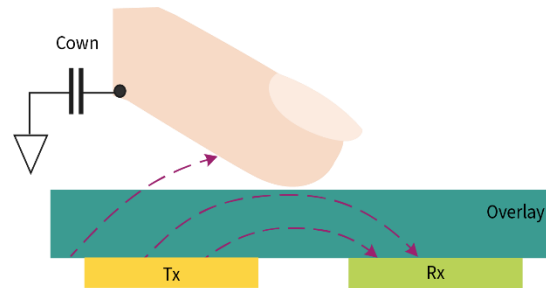
CAPSENSE™ – Capacitive Sensing

Self Capacitive Sensing



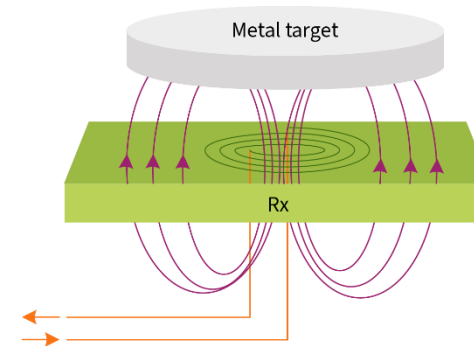
- **CSD** – Infineon's proprietary self-capacitance sensing method
- Measures capacitance of a single electrode
- User touch increases capacitance of the electrode

Mutual Capacitive Sensing



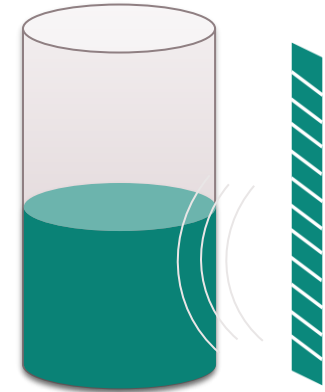
- **CSX** – Infineon's proprietary Mutual-capacitance sensing method
- Measures capacitance between two electrodes
- User touch decreases capacitance between electrodes

Inductive Sensing



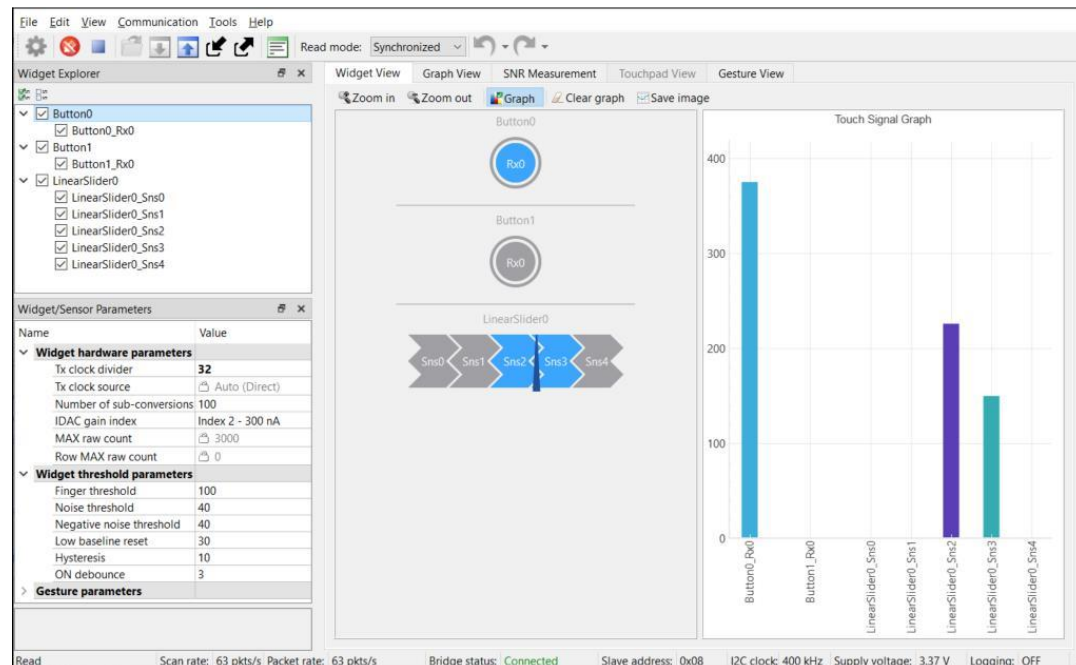
- **ISX** – Infineon's proprietary Inductive sensing method
- Measures inductance of sensor coil
- Deflection of metal decreases inductance of the electrode

Liquid Sensing



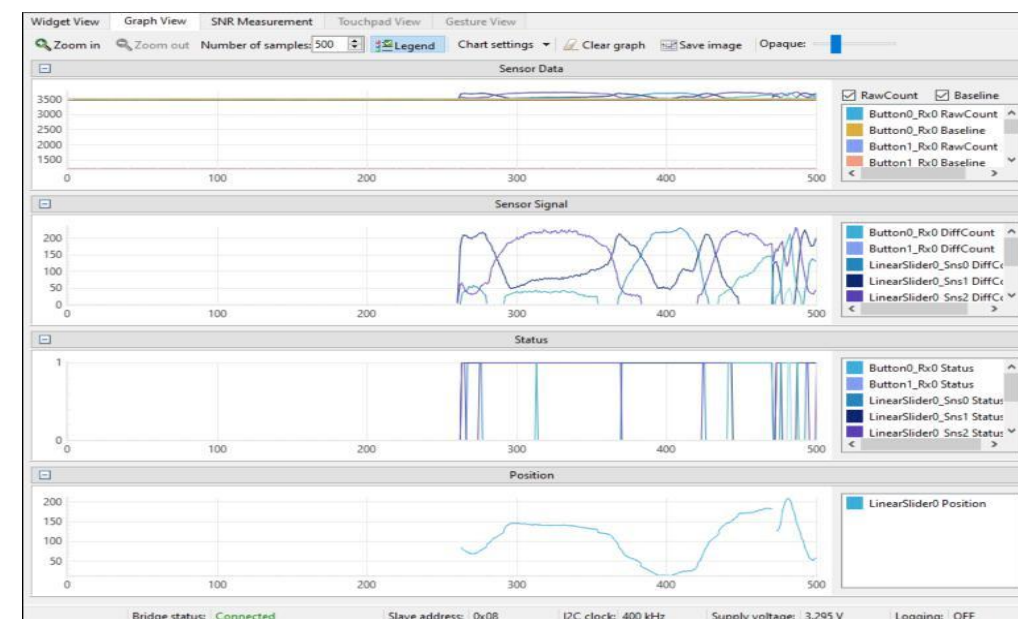
- **LLS** – Infineon's proprietary liquid sensing method
- Detects presence and level of liquid without contacts
- Reliable sensing and rejects false signals such as foam mist and droplets

CAPSENSE™ Configurator & tuner



- The CAPSENSE™ Configurator allows user to manipulate different settings, including calibration parameters
- Enable/disable gestures
- Tipo de sensor; gpio; parâmetros de calibração; sensibilidade

- The CAPSENSE™ Tuner is a stand-alone tool included with the ModusToolbox™ software
- Widget – A CAPSENSE™ functional unit consisting of one sensor or a group of similar sensors, implementing a specific higher-level functionality such as Button, Proximity Sensor, Linear Slider, Radial Slider, Matrix Buttons or Touchpad



Aplicações de Sensoriamento Indutivo

Button



Proximity



Rotary Encoder



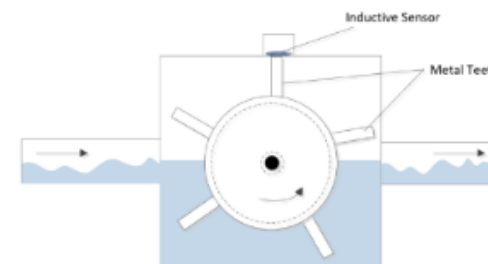
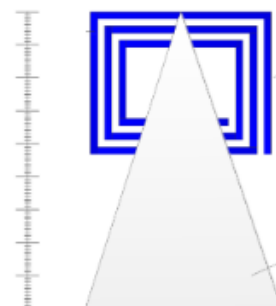
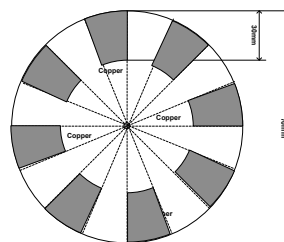
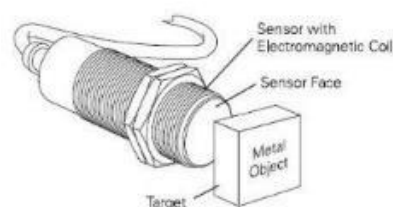
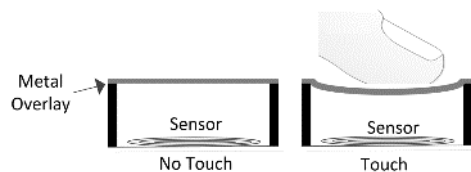
Linear Encoder



Flow



Hybrid Inductive & Capacitive



ISX Sensor design tool for inductive sensing – simplifying design workflow with parameter control and optimized output

Designer inputs

Coil shape and size

- Coil size
- Coil Shape
- Number of coils

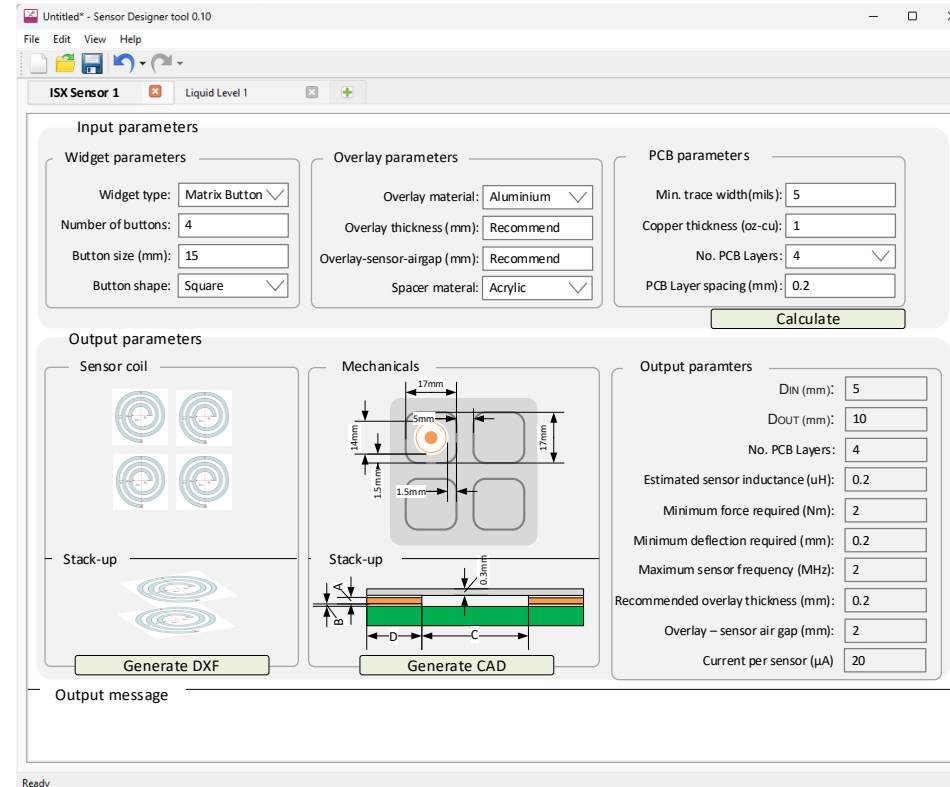
Overlay material

- Overlay material
- Overlay thickness
- Gap to the sensor coil
- Spacer material

Coil parameters (PCB)

- Trace width
- Cu thickness
- No. of layers
- Spacing between turns

Sensor Designer Tool



Tool Output

Coil shape and size

- Inside diameter of the coil
- Outside diameter of the coil
- Number of layers
- Estimated sensor inductance
- Minimum required force, minimum required deflection
- Max sensor frequency

Overlay material

- Recommended overlay thickness
- Gap to the sensor coil

Power estimator

- Current per sensor coil

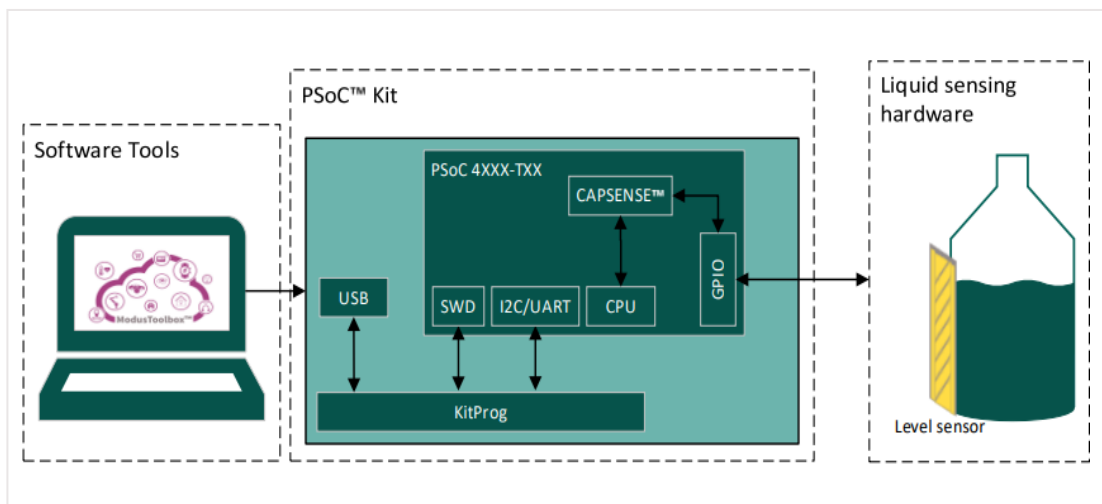
Layout

- Dxf for sensor pattern
- CAD for sensor stackup recommendation

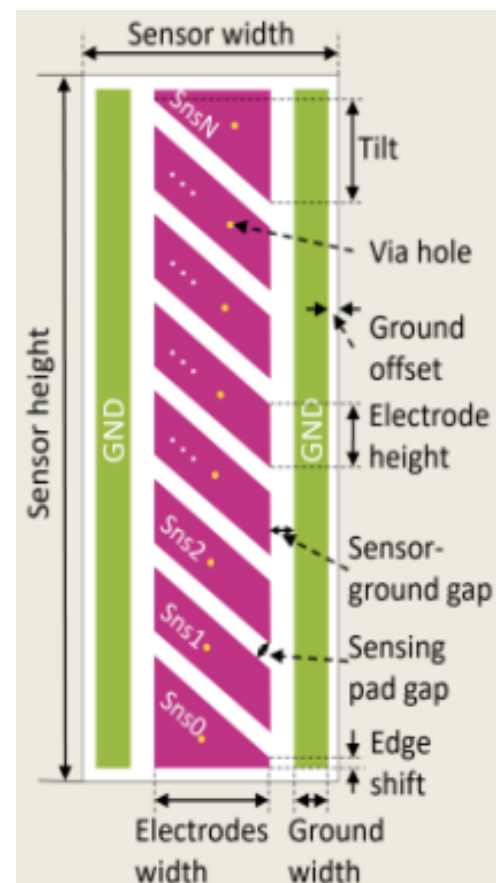
PSOC™ 4 Liquid level sensing overview

Contactless Measurements

- Eliminates the need for mechanical parts and works in noisy environments with an industry-leading SNR
- Reduces system cost by offering a one-chip solution that uses inexpensive capacitive sensors and Flexible PCBs
- Enables rapid prototyping and design iterations in software with no hardware changes by simply modifying the CapSense Component using the Modus Toolbox



Capacitive sensor patterns for Liquid Level Sensing

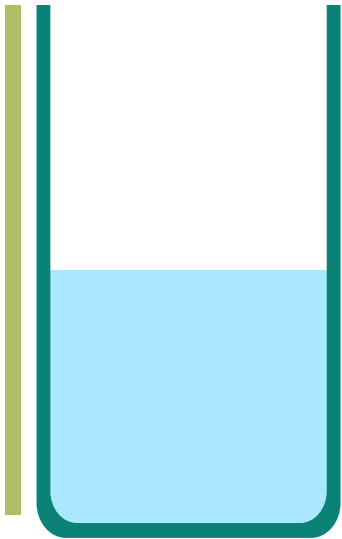


Example construction using Infineon flex Sensor



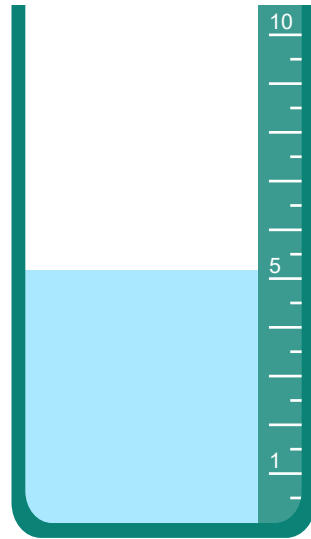
Liquid sensing with PSOC™ 4 Multi-Sense solves challenges that other liquid sensor solutions can't

Contactless



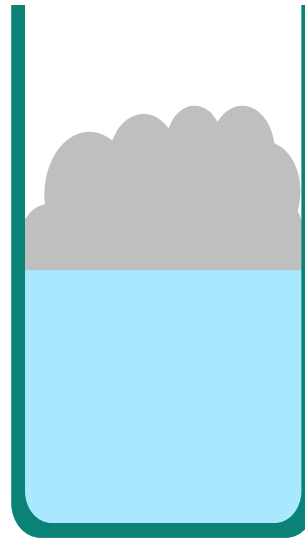
- **Contactless OR contact-based** liquid sensing designs
- **Up to 3mm airgap** for low-res liquid detection

High-resolution



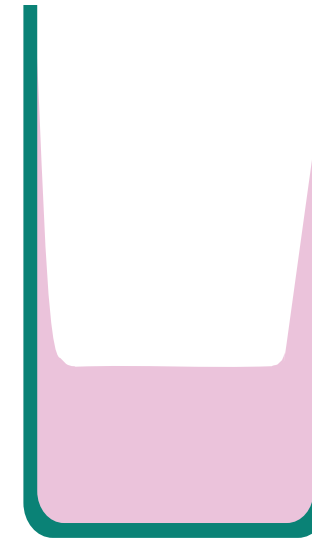
- Supports high-resolution designs
- **Up to 0.1mm step size** (e.g. 1,000 levels in container with 10cm height)

Foam rejection



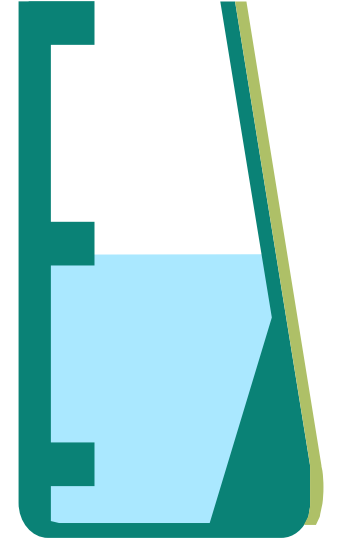
- Operates highly reliable **differentiating liquids from foam**

Residue rejection



- Operates highly reliable **rejecting residue on container walls**

Special containers



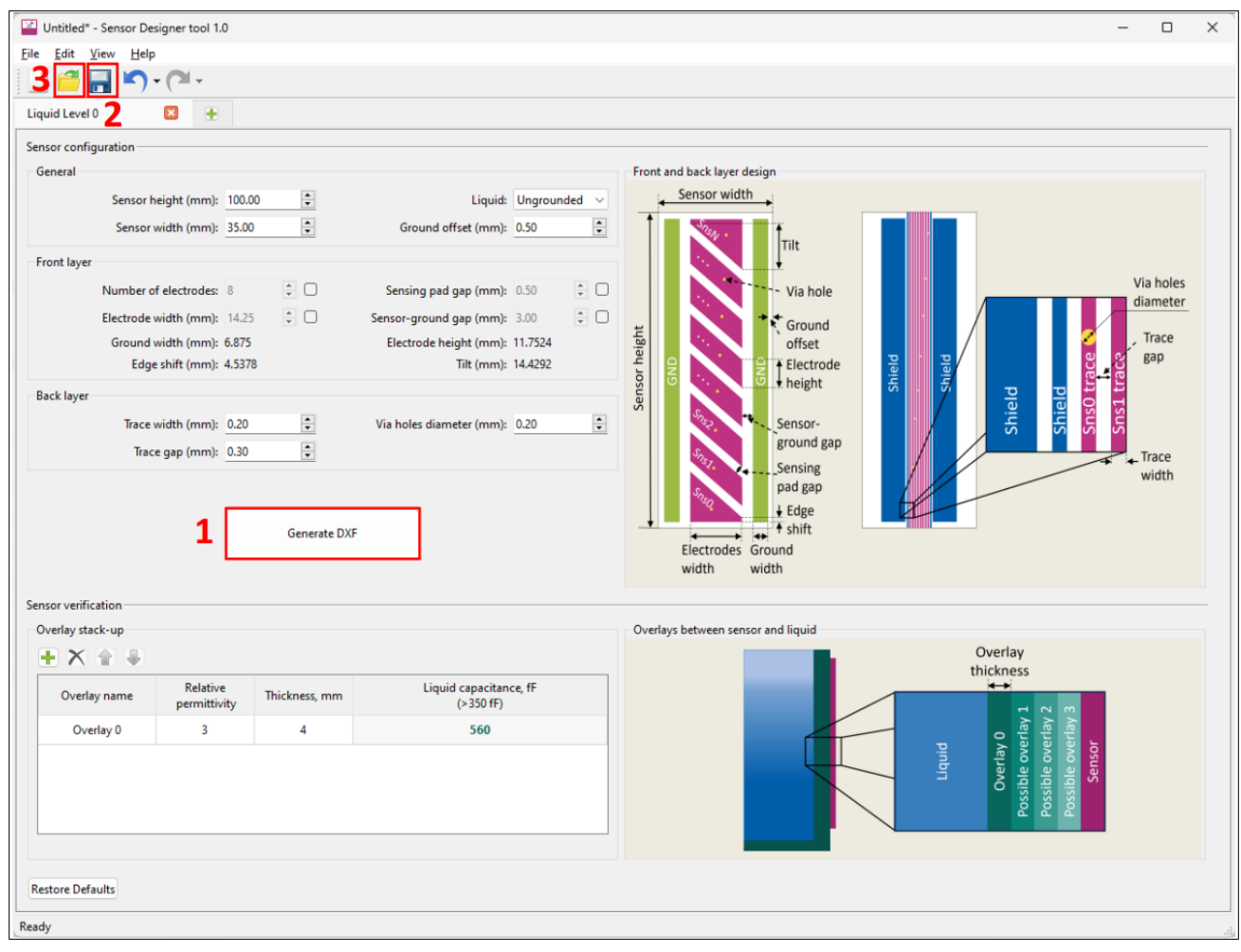
- Supports **non-linear shapes and thicknesses**
- Sensor can be **trained with ML based tool**

+ Infineon liquid sensing solution has **low temperature dependency** and is **agnostic to assembly/process variations**

Simplifies design process for engineers, designing liquid level sensors in <5mins

Liquid Sensing Solution – Sensor Designer in ModusToolbox™

ModusToolbox™ – Sensor Designer



- Sensor Designer integrated with ModusToolbox™
- Accepts container size, detection levels, resolution, etc. as inputs
- Sensor design tool will generate a DXF with LLS sensor pattern with Modus Toolbox™
- **Inputs:**
 - Sensor height, Sensor width, Liquid, Ground offset
- **Outputs:**
 - Number of Electrodes, Electrode width, Sensing pad gap, Sensor-ground gap, Trace width, Trace gap, Via holes diameter, Overlay stack-up

PSOC™ 4000T Multi-Sense – Solution Demo and Hardware Kit

Inductive Sensing Solution Demo



Inductive sensing solution demo available on request

PSOC™ 4000T Multi-Sense Prototyping Kit



CY8CPROTO-040T-MS: Kit with inductive, liquid sensing & hover touch expansion boards available from March '25
For early access program, please contact regional marketing

Many more kits available on web with CAPSENSE™ on PSOC™ MCU Family of devices

XMC™ Family

Industrial Microcontrollers



XMC™ Portfolio

XMC4000-ARM® Cortex®-M4 (with FPU)

- › CPU Frequency up to 144 MHz
- › Timers CCU4, CCU8, POSIF
- › USB / Up to 6x CAN nodes / Up to 6x Serial Channels
- › Up to 4x 12 Bit ADC / 2x DAC
- › Ethercat Slave interface
- › Ta = -40 to 125°C

XMC4100/4200

Up to 256 kB Flash /
40 kB RAM
48-64 pins

XMC4400

Up to 512 kB Flash /
80 kB RAM
64-100 pins

- › 120 MHz Core
- › Ethernet
- › ΔΣ Demodulator

XMC4500

Up to 1 MB Flash /
160 kB RAM
100 – 144 pins

- › EBU
- › SD Card

XMC4700

Up to 2 MB Flash /
352 kB RAM
100 – 196 pins

- › 144 MHz Core
- › 6 ch CAN

XMC4800

Up to 2 MB Flash /
352 kB RAM
100 – 196 pins

XMC4300

256 kB Flash /
352 kB RAM
100 pin

EtherCAT®

XMC7100

4 MB Flash / 768 kB RAM,
250 MHz single/dual core
100 – 272 pin (QFP/BGA)

XMC7200

8 MB Flash / 1 MB RAM,
350 MHz single/dual core
176 – 272 pin (QFP/BGA)

XMC1000-ARM® Cortex®-M0

- › Core up to **48 MHz** / Peripherals up to **96 MHz**
- › Timers CCU4, CCU8
- › 2x Serial Channels
- › 12 Bit ADC
- › **1.8 V-5.5 V**
- › Ta = -40 to 105°C

XMC1100

up to 64 kB Flash
16 – 40 pins

- › 9 ch LED flicker free control (BCCU)
- › 3x Analog Comparators

XMC1200

up to 200 kB Flash
16 – 40 pins

XMC1300

up to 200 kB Flash
16 – 40 pins

- › Math Co-Processor
- › CCU8 PWM Timer
- › Hall & Encoder I/F

XMC1400

up to 200 kB Flash
40 – 64 pins

- › 48 MHz/96 MHz clock
- › 2x CAN
- › 2x CCU8
- › 4x Analog Comparators

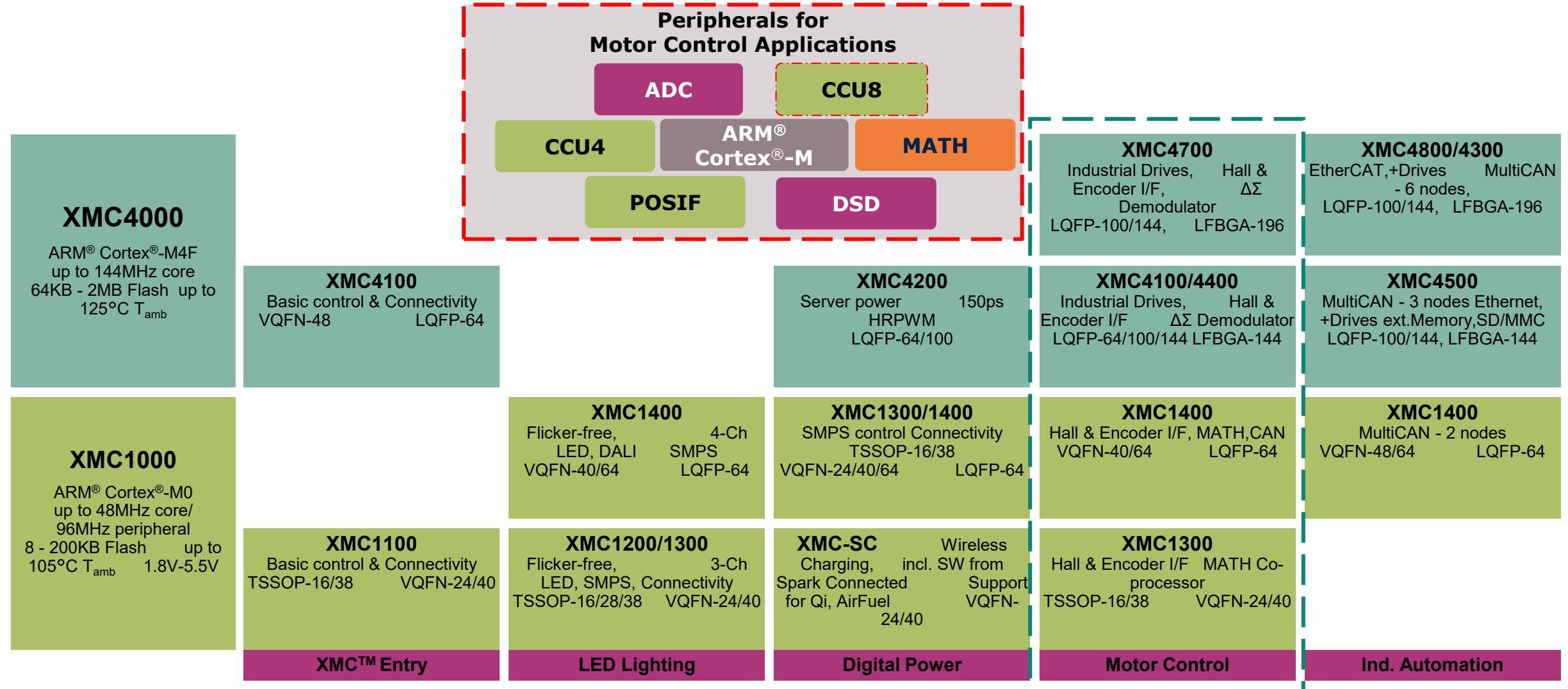
>70% performance increase

- › **Single or dual core** Arm® Cortex®-M7 and Cortex®-M0+
- › M7 CPU core Frequency up to **350 MHz**
- › Temperature range: **Ta = -40 to 125°C**
- › Memory Up to **8 MB Flash, 1 MB RAM**
- › **TCPWM** timers of 102Ch 16 bit and 16Ch 32 bit
- › **Cryptography** Engine support
- › Interfaces such as CAN-FD, **Gb Ethernet**
- › **SMIF** and SDHC interface supported
- › Extended voltage operating range: **2.7 to 5.5V**
- › low power modes(LP/deep sleep, **hibernate..**)
- › ADC and Serial COM. Chs
- › **Read While Write (RWW)** Flash capability



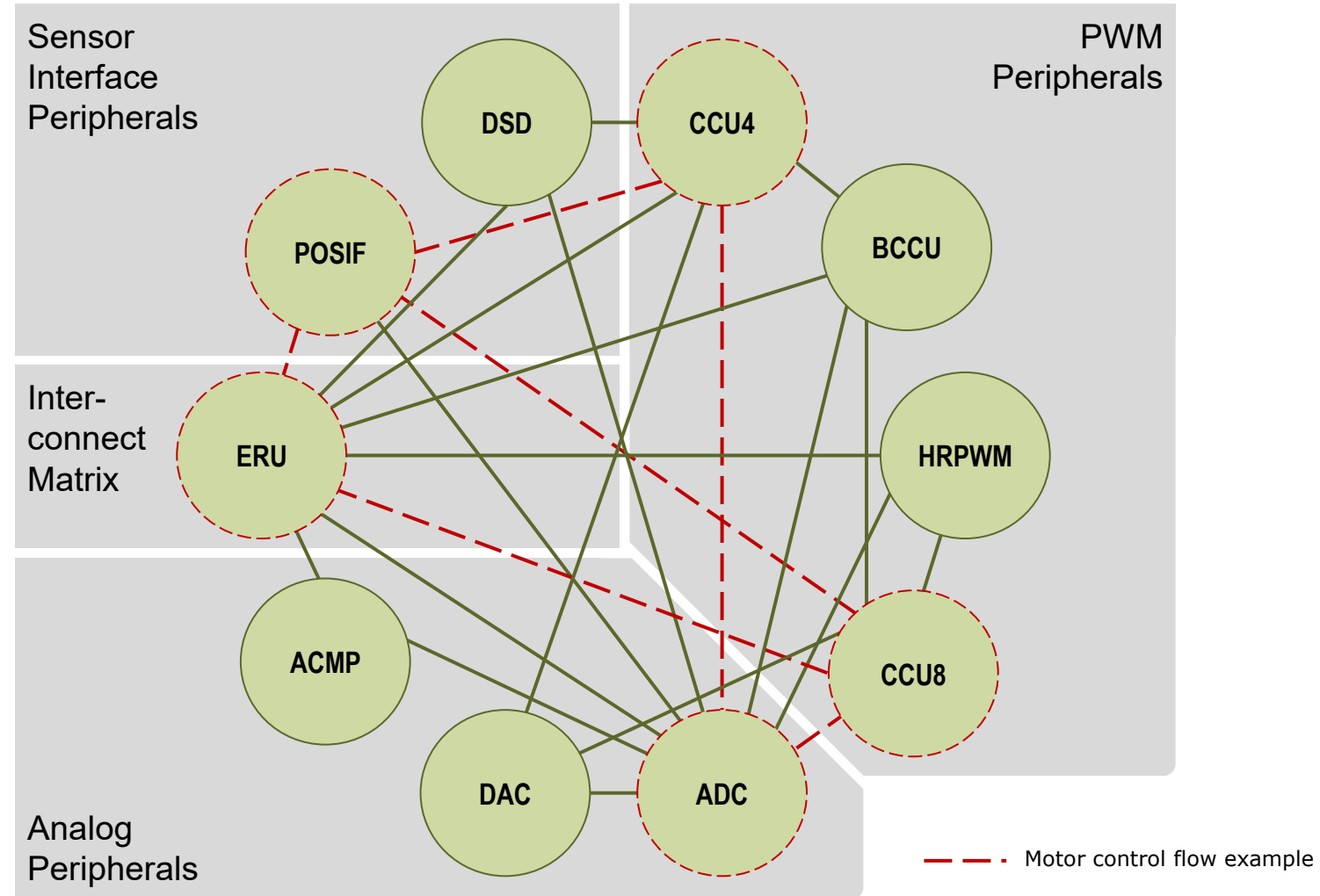
XMC™ Applications

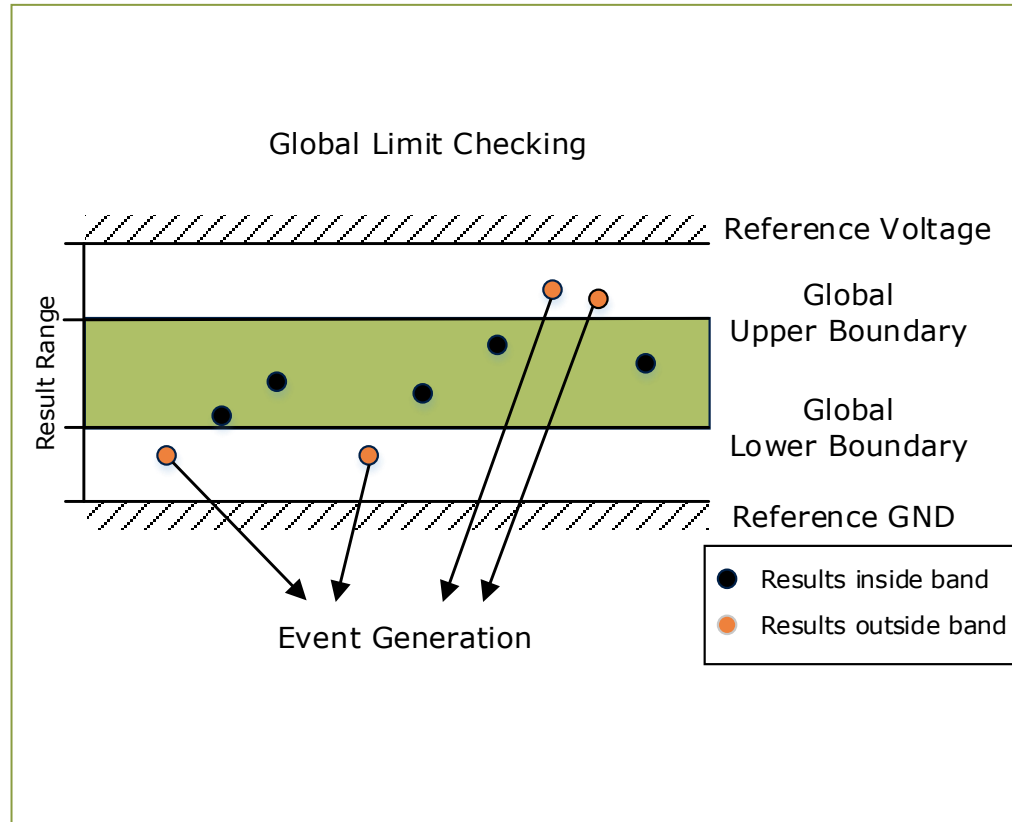
Motor Control



XMC Peripherals - ERU

Interconnected analog, PWM and sensor interface





Overview

Limit checker

- › Control of an analog signal
- › Signal increases or decreases above or below the configurable value

Event is triggered and an action executed

Example

- › Detect an overvoltage
 - › Generate a stop signal
- Avoid damage on hardware

XMC1100 Series

Description

Application / Target Markets

- Motor Control
- Digital Power/Wireless Charging
- LED Lighting

Key Features

- On-chip **connectivity of peripherals** offloads CPU and improves real time performance
- **Motor Control Hall and Encoder Interface**
- Extended 1.8 – 5.5V Supply Range
- High control performance: 64MHz PWM, 1MS ADC and 25ns Comparators
- Best in class LED dimming & color control unit, flicker-free, easy to use
- IEC 60730 class B compliant LIB

Packages

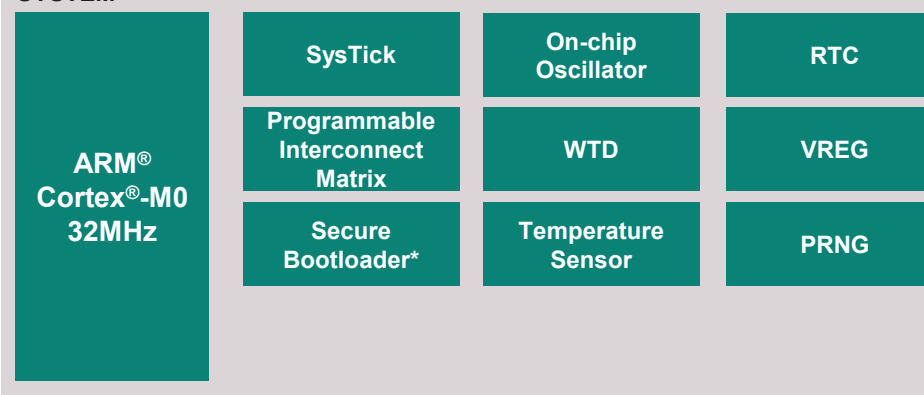


TSSOP16
TSSOP38
VQFN24
VQFN40

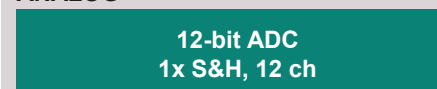
Collateral

Documentation: [Data Sheet](#) / [User Manual](#)

SYSTEM



ANALOG



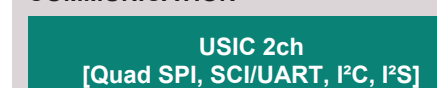
MEMORY



TIMER / PWM



COMMUNICATION



* On request

Availability

In Production

XMC1300 Series

Description

Application / Target Markets

- Motor Control
- Digital Power/Wireless Charging
- LED Lighting

Key Features

- **On-chip** connectivity of peripherals offloads CPU and improves real time performance
- **MATH Co-processor** boosts Cortex®-M0 core performance by adding complex math computing engine running in parallel to the main core
- Motor Control **Hall** and **Encoder Interface**
- Extended **1.8 – 5.5V** Supply Range
- High control performance: **64MHz PWM**, **1MS ADC** and **25ns** Comparators
- Best in class **LED dimming & color control unit**, **flicker-free**, easy to use
- **IEC 60730** class B compliant LIB

Packages



TSSOP16
TSSOP38
VQFN24
VQFN40

Collateral

Documentation: [Data Sheet](#) / [User Manual](#)

SYSTEM

ARM®
Cortex®-M0
32MHz

64Mhz MATH
Co-Processor

On-chip
Oscillator

RTC

SysTick

WTD

VREG

Programmable
Interconnect
Matrix

Temperature
Sensor

PRNG

Secure
Bootloader*

TIMER / PWM

4 independent PWM Timers (CCU4)
16-64Bit 4ch, 64MHz

4 independent PWM Timers (CCU8)
16-64Bit 8ch, 64MHz
+ Dead-Time

ANALOG

12-bit ADC
2x S&H, 12 ch

Analog Comp
3x

MEMORY

FLASH 200KB
ECC

RAM 16KB

APPLICATION SPECIFIC

Hall & Encoder I/F
(POSIF)

LED control
9 ch

COMMUNICATION

USIC 2ch
[Quad SPI, SCI/UART, I²C, I²S]

* On request

Availability

In Production

XMC1400 Series

Description

Application / Target Markets

- Motor Control / PFC + Motor Control
- Digital Power / LED Lighting
- I/O Modules

Key Features

- Designed for best in-class performance:
MATH Co-processor featuring CORDIC, 96MHz PWM timer dedicated to motor or engine control w/ dead time and Hall & Encoder I/F
- On-chip connectivity of peripherals offloads CPU and improves real time performance
- 1MS ADC with add. internal reference multiple signal processing features
- Peripheral for LED dimming & color control, flicker-free, easy to use
- Extended 1.8 – 5.5V Supply Range
- IEC 60730 class B compliant LIB
- 2 CAN nodes control **IEC 60730** class B compliant LIB

Packages



LQFP64
TSSOP38
VQFN40
VQFN48
VQFN64

Collateral

Documentation: [Data Sheet](#) / [User Manual](#)

SYSTEM

ARM® Cortex®-M0 48MHz	96Mhz MATH Co-Processor	On-chip Oscillator	RTC
	SysTick	WTD	VREG
	Programmable Interconnect Matrix	Temperature Sensor	PRNG
	Secure Bootloader*	Clock Input 4-20 MHz	Clock Input 32.768 kHz

TIMER / PWM

8 independent PWM Timers (CCU4) 16-64Bit 4ch, 96MHz	8 independent PWM Timers (CCU8) 16-64Bit 8ch, 96MHz + Dead-Time
--	---

ANALOG

12-bit ADC 2x S&H, 12 ch	Analog Comp 4x
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MEMORY

FLASH 200KB ECC, PFU	RAM 16KB
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APPLICATION SPECIFIC

2x Hall & Encoder I/F (POSIF)	LED control 9 ch
-------------------------------------	---------------------

COMMUNICATION

USIC 4 Ch	2xCAN 32 MO
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* On request

Availability

In Production

XMC14_2GO KIT: Low cost XMC1000 kit – Use XMC14_2GO kit to kickstart XMC1000 product evaluation

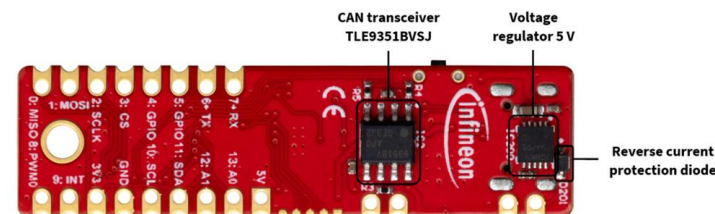
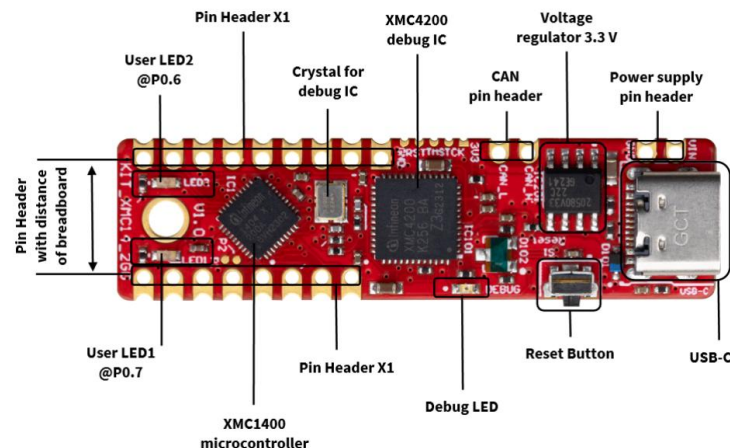
KIT_XMC14_2GO

FEATURES

- › XMC1404-Q040X0200 ('super set' device)
- › 48 MHz, 200 KB flash, 16KB RAM
- › USB (5v) or externally (12v) powered
- › Segger J-Link debugger with virtual COM
- › Pin header for sensor shields/breadboard
- › CAN bus interface
- › 2 user LEDs

BENEFITS

- › Low cost evaluation platform
- › Getting started with ModusToolbox™
- › Fully supported in Arduino IDE
- › Full debug support for SWD and SPD
- › UART-to-USB bridge (virtual COM)
- › Easy access to all peripheral modules



Fridge



Ceiling Fan



Home appliance



Pumps



Small Home Appliance

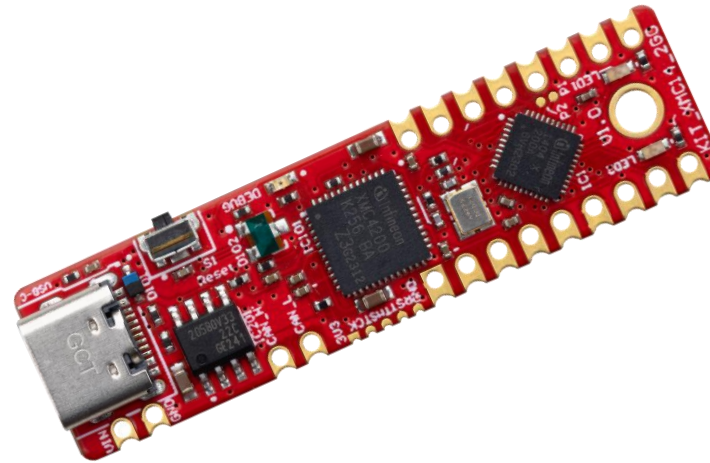
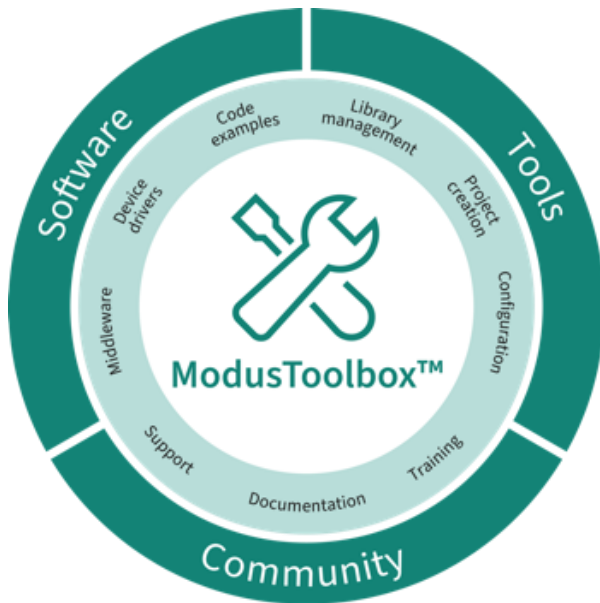


Call to Action

1. Download [ModusToolbox™](#)

2. Purchase a [KIT_XMC14_2GO kit](#)

3. Get free XMC1100 samples



ISaR

Easy as 1-2-3!

XMC™ Applications

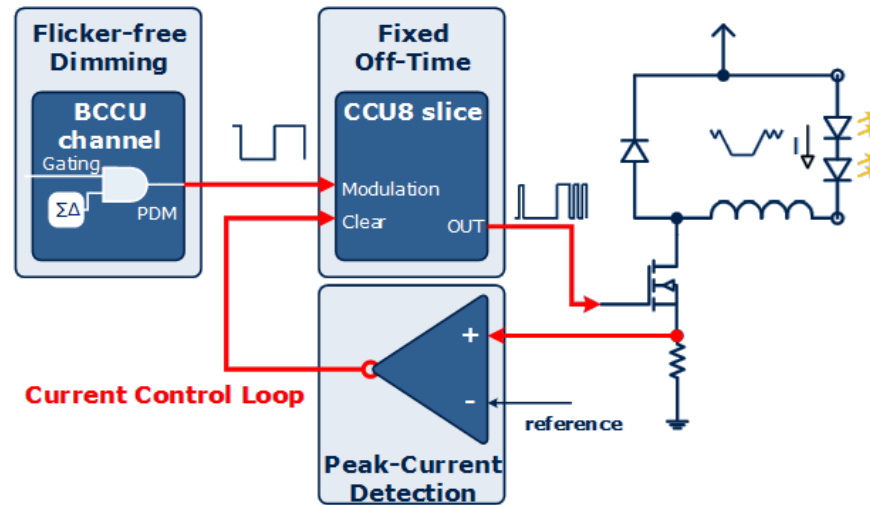
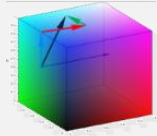
LED Control

XMC™ LED Lighting

XMC™ can cover
LED control, AC/DC
SMPS, Connectivity
e.g DALI and DMX
and additional
housekeeping
functions



- **Automatic brightness control** (using high-frequency pulse density modulation) based on the $\Sigma\Delta$ -principle enables completely flicker-free dimming through 9 output channels.
- **Automatic exponential dimming** and linear intensity changes make brightness or color changes appear smooth and natural to the human eye.



SMPS



Smart city
lighting

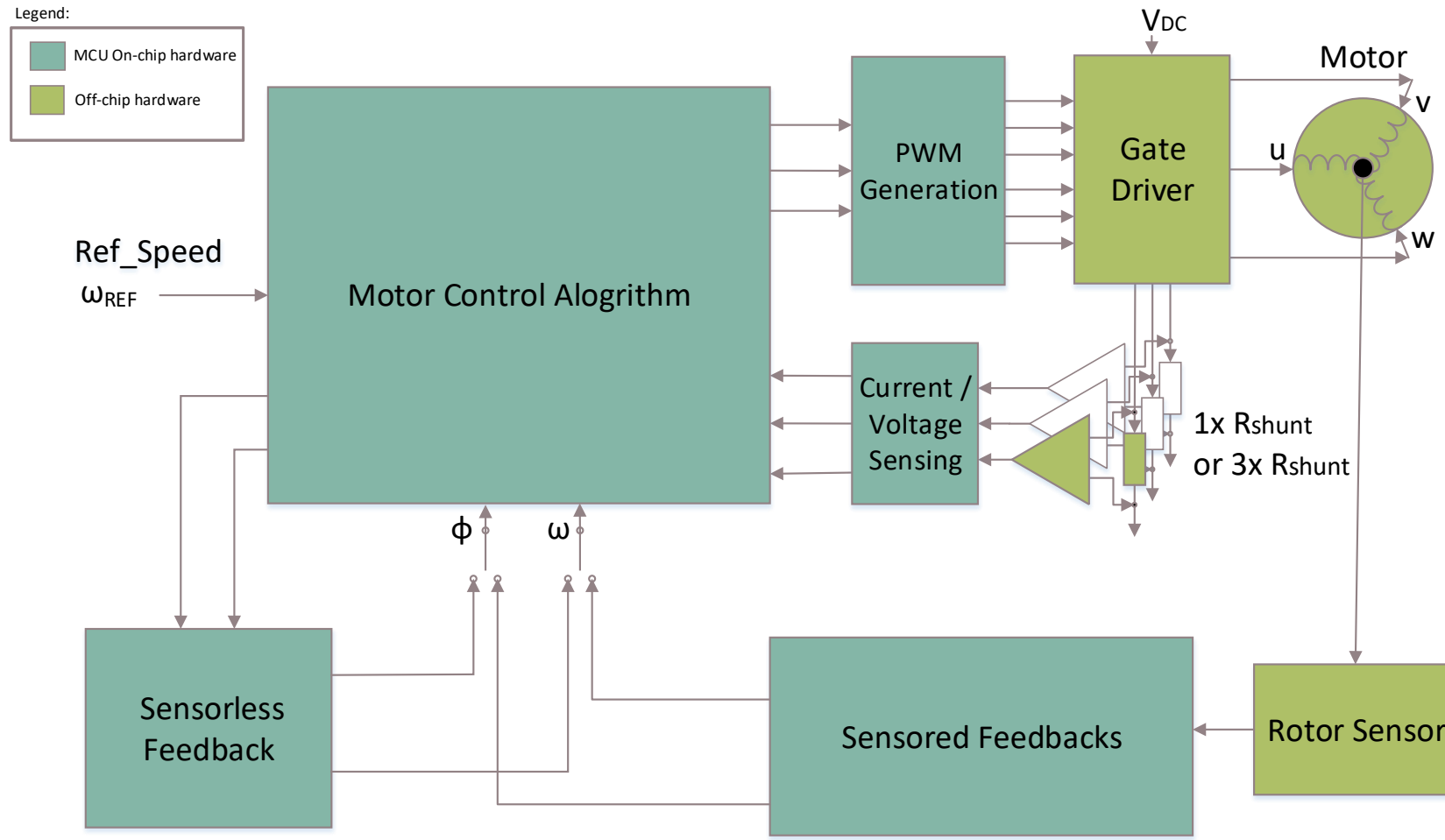


Smart lighting



LED Control with dedicated peripherals results in close to **0% CPU load** & Memory Savings

XMC™ Peripherals for Motor Control – Typical System Block Diagram



System Block Diagram: Motor Control System

PSOC™ Control C3

is the Brain of Every Power
Application



Industrial MCU markets are growing with an increasing need for higher efficiency.

PSOC™ Control targets motor control and power conversion



Industrial Microcontroller Market Segments



1. Motor Control

- Higher system efficiency (performance, power, integration, ML)
- Growth driven by Robotics and Home Appliance applications



2. Power Conversion

- Higher efficiency and performance enabled by WBG (SiC/GaN)
- Optimized MCU products needed for WBG solutions



3. Industrial Communication

- Evolving communication standards and user interfaces

PSOC™ Control C1

PSOC™ Control C3

PSOC™ Control 4-8

Key trends and drivers across all Industrial MCU segments



Common **Software & Tool environments** (incl. more AI/ML)



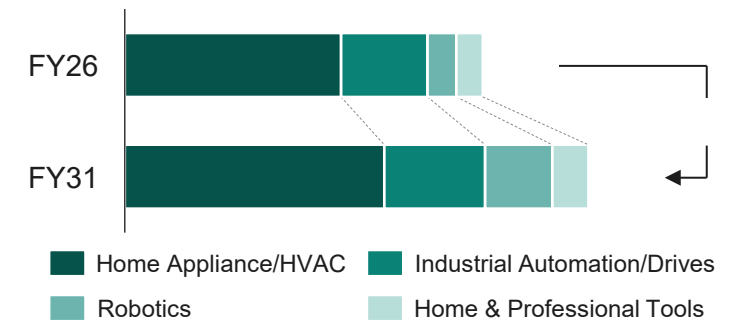
Strong and exhaustive **Ecosystems**



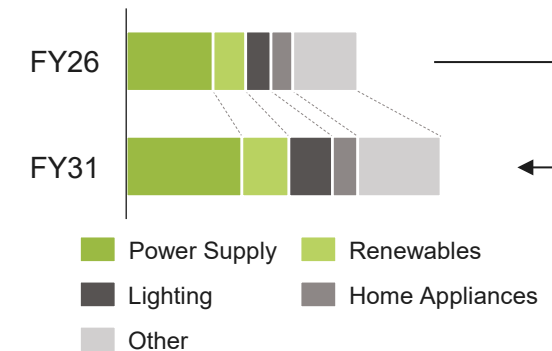
Functional Safety and **Advanced Security**

Target MCU Market Outlook (in bn €)

Motor Control



Power Conversion



Source: Infineon Market Model 2026

PSOC™ Control – Infineon's new microcontroller family for a variety of motor control and power conversion applications



PSOC™ Control C1

- Arm® M0 48 MHz
- Entry-level product for simple motor control
- 38- to 48-pin TSSOP, QFN & QFP packages
- Lead applications:



Power tools



Home appliance



HVAC compressor



Small home appliance

PSOC™ Control C3

- Arm® Cortex®-M33 up to 180 MHz
- Single core (+PPCA) with up to 512KB Flash and 128KB RAM
- 40- to 100-pin QFN and QFP packages
- First products available, full portfolio by end of 2026
- Lead applications:



Power tools



Gardening tools



Home appliance



HVAC compressor



Heat pump



AC-DC



SMPS



Lighting



Vacuum cleaner



Small home appliance



HVAC blower



Motor



Solar



EV charging

- Available/Sampling
- In Development
- In Definition
- Planned

Feature integration

Core Frequency



>100 MHz

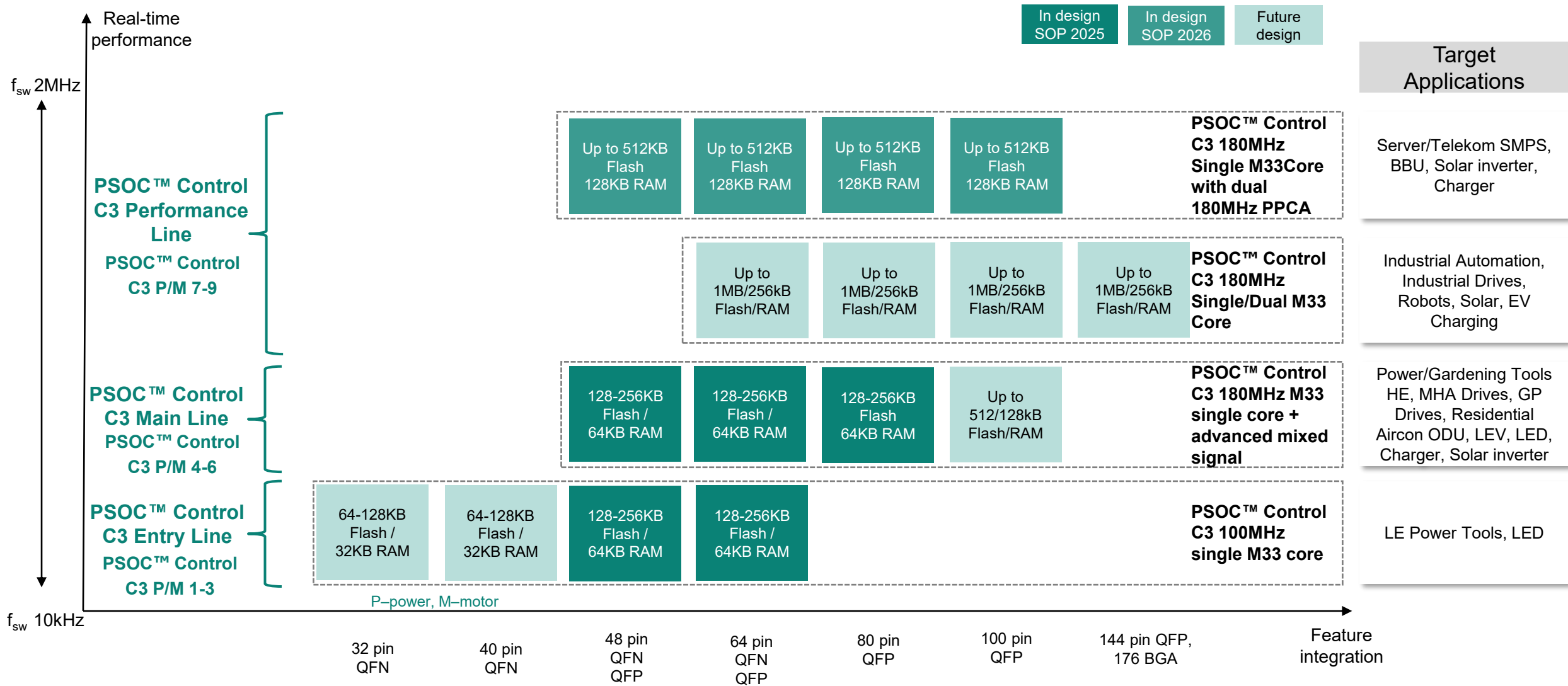


>200 MHz

>400 MHz

PSOC™ Control C3 Product Portfolio

Scalability in Real-Time Performance and Feature Integration



PSOC™ Control C3 Main Line - Differentiating Features for Motor Control and Power Conversion

Key features

- “Idle Sampling” 12 Msps ADC with 16 synchronous S&Hs
- <10 ns comparators with in-built DAC
- <1 ns latency peripheral interconnects

- Timers with <100ps PWM resolution for in-cycle control for versatile Motor/Power Conversion

- CORDIC Accelerator

- 128-bit Flash-read, 16 kB I-Cache
- “Protection Context” Flash partitioning

- Security

- Low power modes

Benefits

- > 25% **faster**
- > **Precise** current/voltage measurement
- > **Real-time** operation
- > BOM **savings**

- > **High resolution** allows clean waveform generation with high f_{sw} scalability
- > **Flexibility** for various topologies and driving schemes

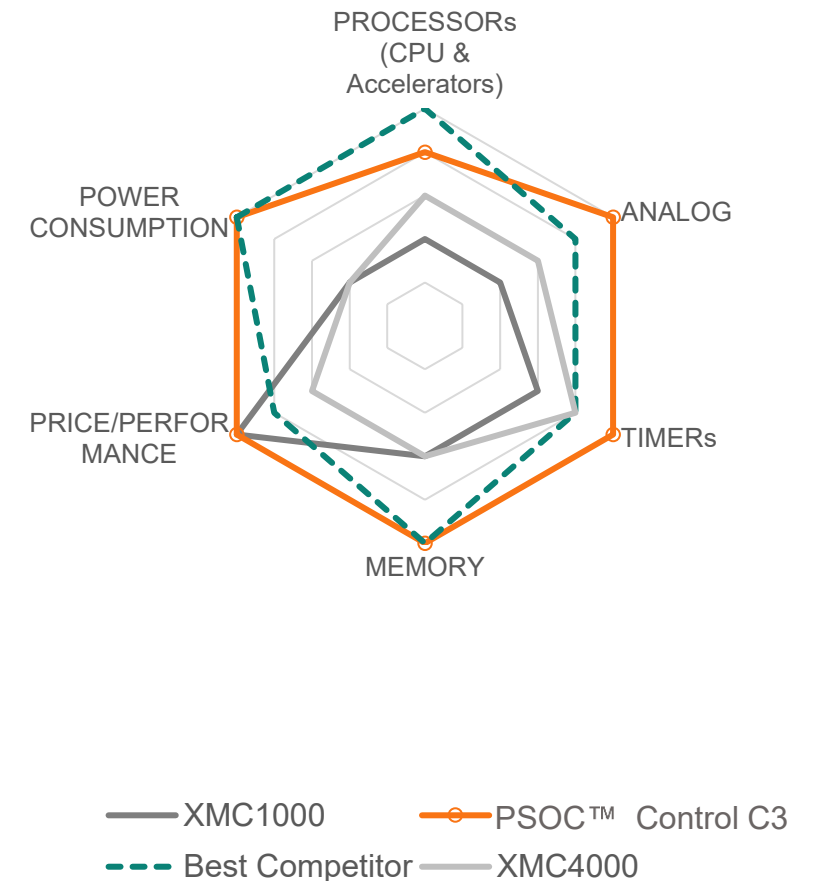
- > **Trigonometric functions CPU offloading** in real-time control tasks (motor control)

- > **Boosted** task execution
- > Up to 7 **use case configurable, protected Flash** partitions

- > **PSA L2**, crypto accelerator, **TrustZone**, key management, secure storage

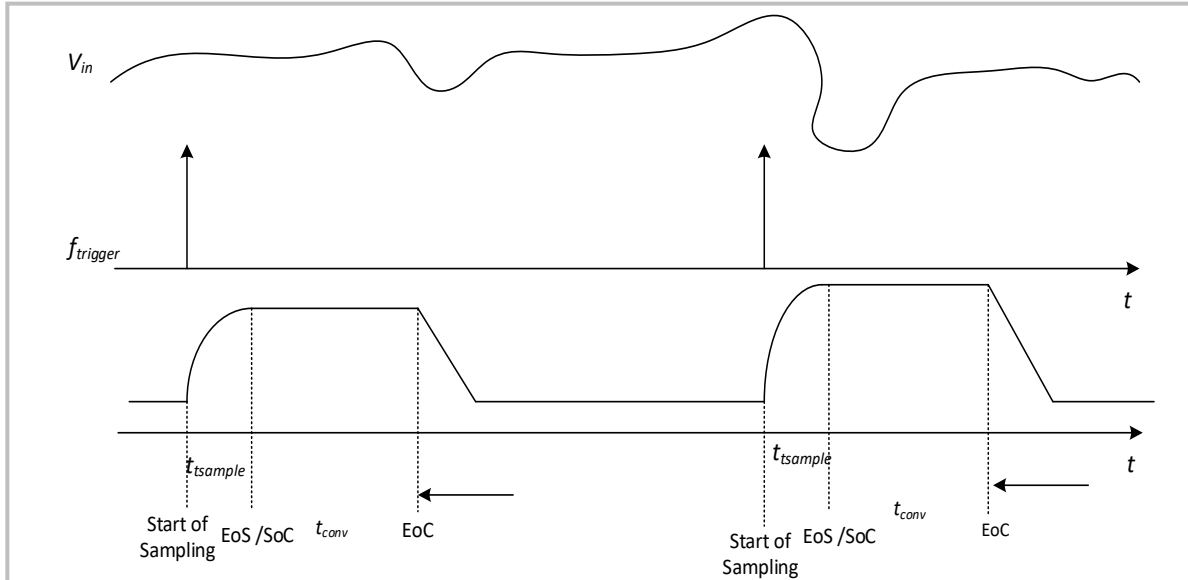
- > Deep sleep **<10uA**
- > Hibernate **<1uA**

Positioning



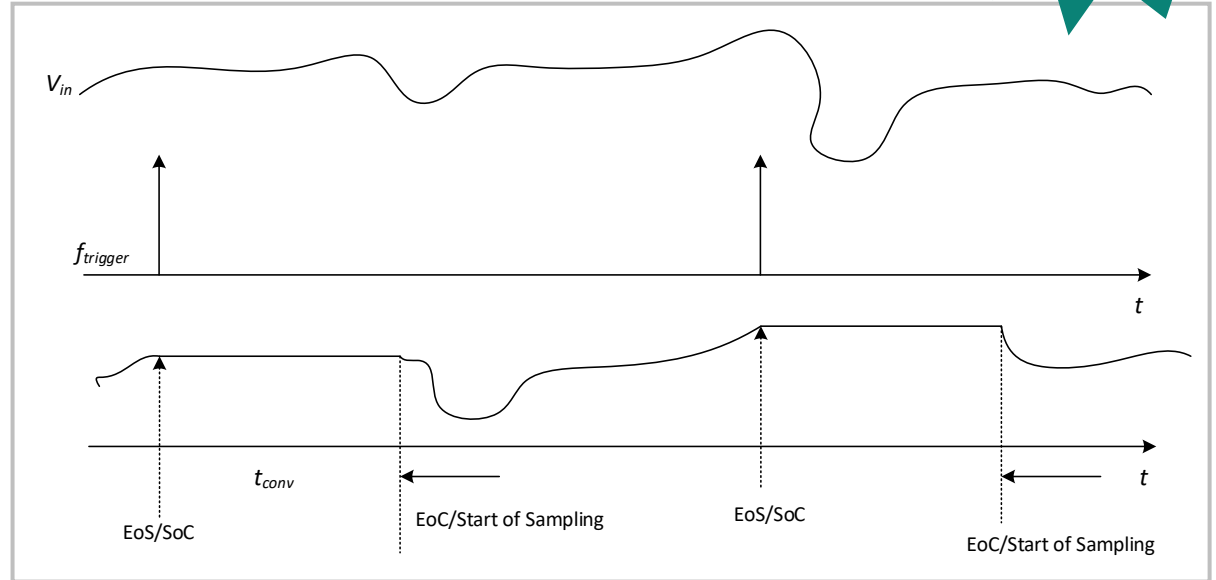
HPPASS: Innovative idle sampling concept holds intrinsic advantages in performance, allows BOM saving

Conventional ADC sampling



- › A trigger signal trigger starts the sampling
- › Sampling goes for t_{sample} time, then the sampled input is converted or put on hold converted.
- › $I_{\text{in}} = C dV/dt$, $dt = \text{sampling time}$. To reduce sampling time, input current must be high putting a **requirement** for **external cap** to supply the charge.
- › **Sampling jitter** if sampling time is big and **result available only after trigger = $t_{\text{sample}} + t_{\text{conv}}$**

Idle ADC sampling



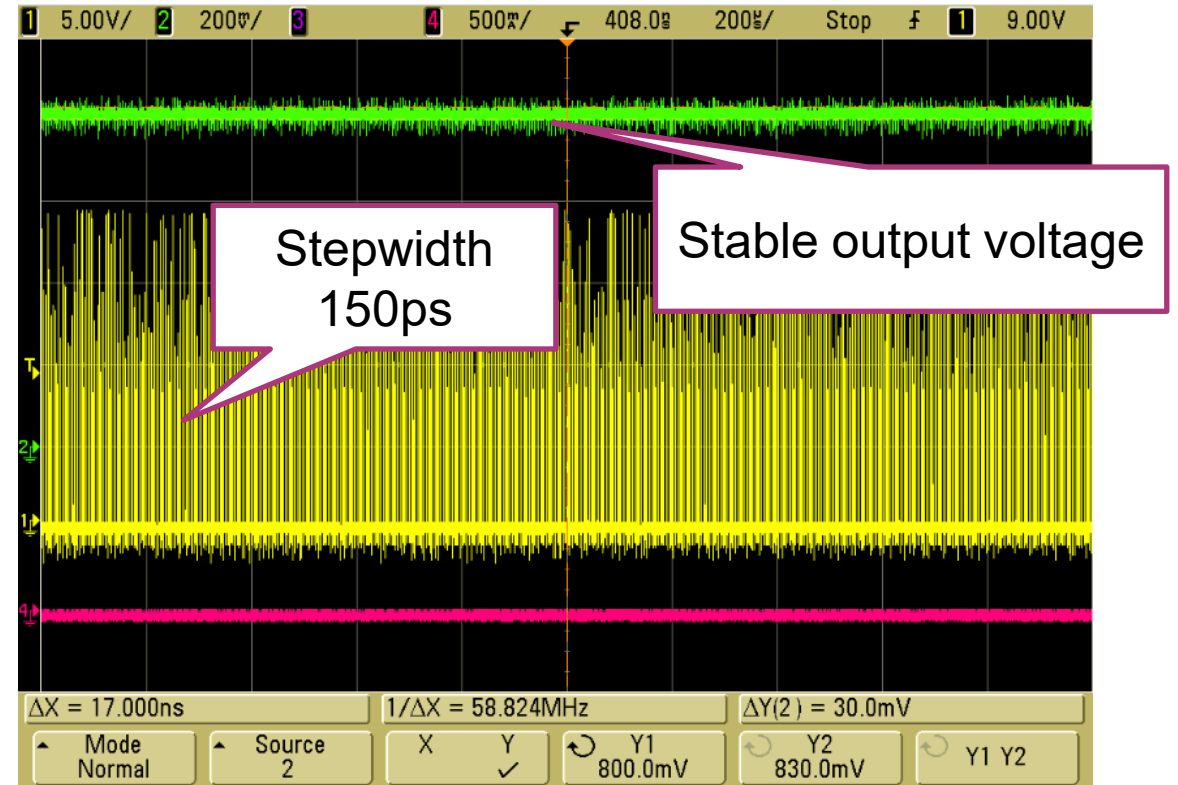
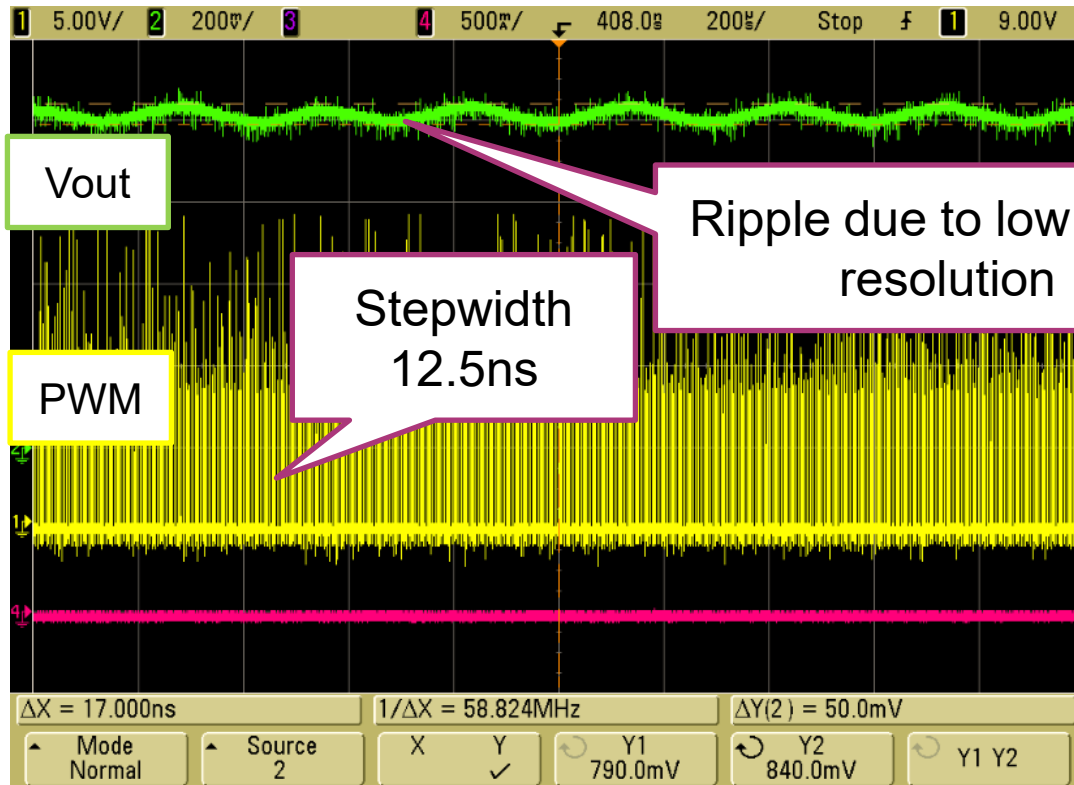
- › Trigger signal ends sampling (EoS) and goes into Hold state. If no other input is converted by ADC, the captured sample will be converted hence start of conversion (SoC). After conversion, sampling re-starts with End of Conversion (EoC). After power up of the module, analog input is always sampling.
- › $I_{\text{in}} = C dV/dt$, $dt = \text{sampling time} = \text{trigger time period}$, hence sampling time given by application which is very large. I_{in} is very low and application **do not require external cap** to provide charge.
- › **No sampling jitter and result available after trigger = t_{conv}**

High resolution PWM benefits on a buck converter in voltage control mode

No HRPWM

Higher accuracy
Better control stability

With HRPWM

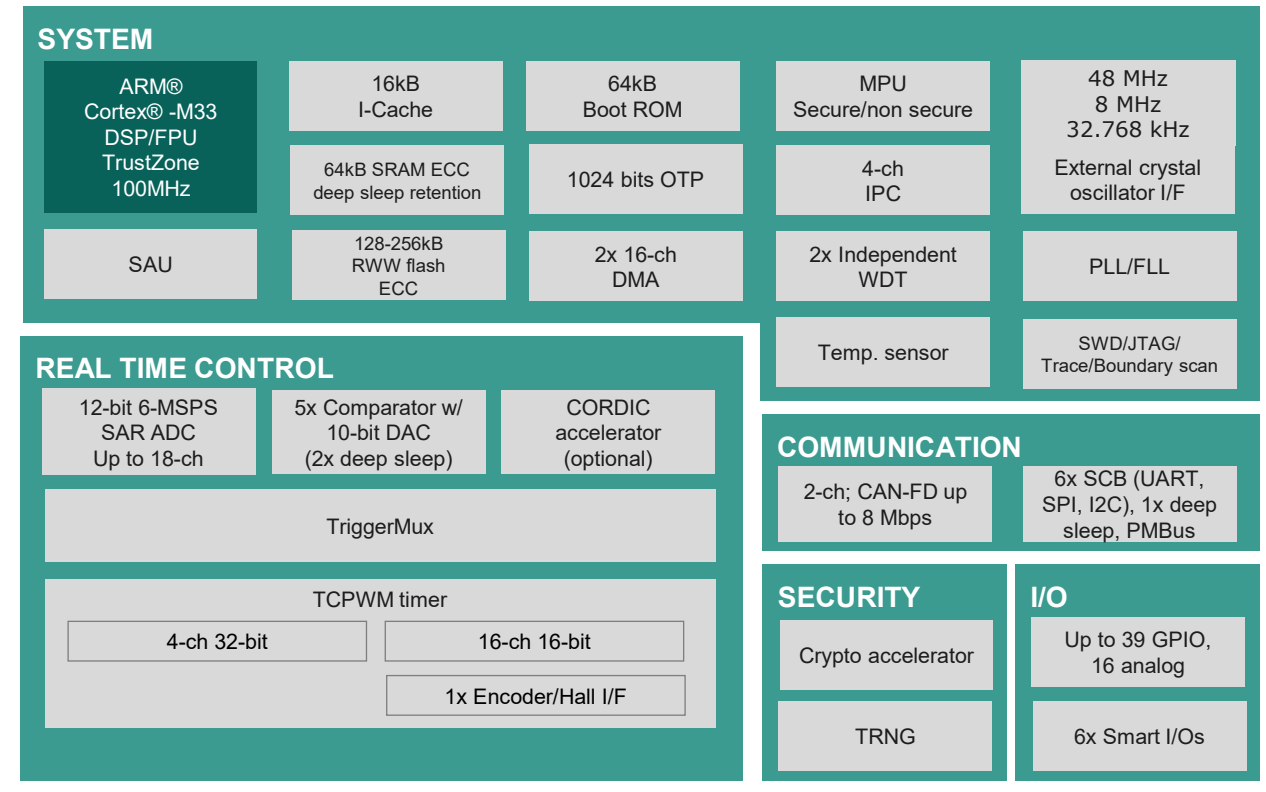


PSOC™ Control C3 Entry Line

PSC3P2 and PSC3M3 (Available)



Block diagram



Status/Availability

- In production
- Datasheet, EVK and qualified samples: available

Packages

QFP-48 (7x7mm, 0.5mm)	QFN-48 (6x6mm, 0.4mm)
QFP-64 (10x10mm, 0.5mm)	QFN-64 (8x8mm, 0.4mm)

Applications and Target Markets

- Industrial ready
- Single and dual motor control, or PFC
- PFC, Power & Gardening tools, MHA and Aircon drives and compressors, LEV drives, SPMS

Product Highlights

- **Low power modes:** deep sleep (<10uA), sleep, hibernate (<1uA)
- **Idle sampling ADC:**
 - Low jitter and high performance, obsoleting external buffer caps
 - 6 MSPS, 16 ch sync. sampling, 16-bit oversampling, in-built gain
- **Comparators:** < 10ns in-built 10-bit DAC and slope generator
- 10-clock-cycles CORDIC Accelerator
- **Timer/Counter/PWM (TCPWM):**
 - Complementary output/ch, multi-ch control, shadow update, input glitch filter, PRNG dithering
- **TriggerMux:** < 1ns latency programmable peripheral interconnects
- **Memory:**
 - 128-256kB RWW Flash, ECC on Flash & RAM
 - 16 kB Instruction Cache
- **Security:** PSA L2 certified, Configurable Flash Partitioning / Protection
- **Safety:** Class B & SIL 2 compliant

Operating Range

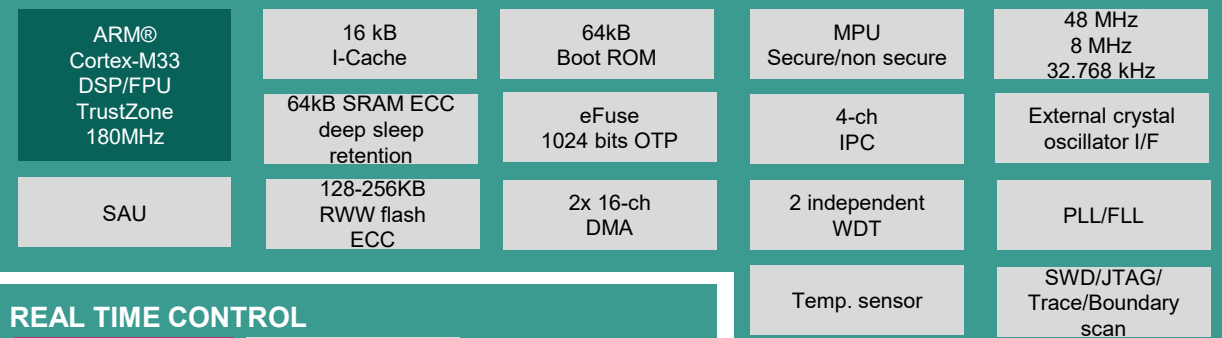
- 1.71 – 3.3V
- <1 – 10 µA low power modes
- -40 – 115°C Ta

PSOC™ Control C3P5 and C3M5 Main Line

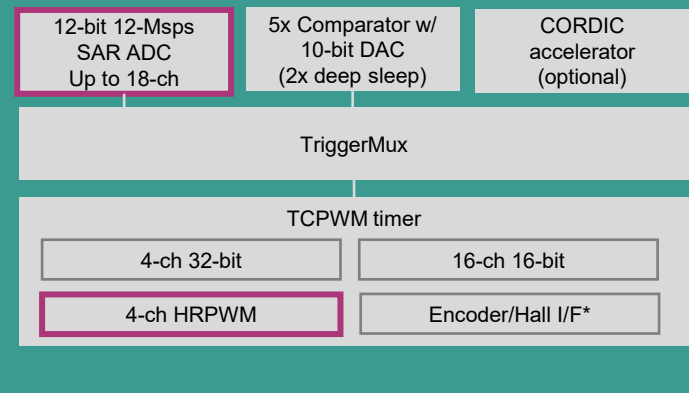
Block diagram

Advanced / New Features

SYSTEM



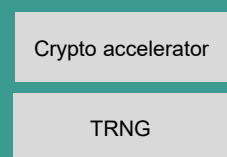
REAL TIME CONTROL



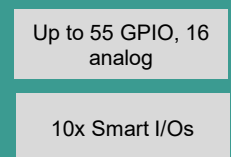
COMMUNICATION



SECURITY



I/O



Applications and Target Markets

- Single and dual motor control, and PFC
- PFC, Power & Gardening tools, MHA and Aircon drives and compressors, LEV drives, SPMS

Product Highlights

- **Low power modes:** deep sleep (<10uA), sleep, hibernate (<1uA)
- **Idle sampling ADC:**
 - Low jitter and high performance, obsoleting external buffer caps
 - 12 MSPS, 24 ch sync. sampling, 16-bit oversampling, in-built gain
- **Comparators:** < 10ns in-built 10-bit DAC and slope generator
- 10-clock-cycles CORDIC Accelerator
- **Timer/Counter/PWM (TCPWM):**
 - Complementary output/ch, multi-ch control, shadow update, input glitch filter, PRNG dithering
 - < 100 ps high resolution PWM (HRPWM) for period, duty & dead time
- **TriggerMux:** < 1ns latency programmable peripheral interconnects
- **Memory:**
 - 128-bit RWW Flash @ 20 Mhz, ECC on Flash & RAM
 - 16 kB Instruction Cache
- **Security:** PSA L2 certified, Configurable Flash Partitioning / Protection
- **Safety:** Class B & SIL 2 compliant

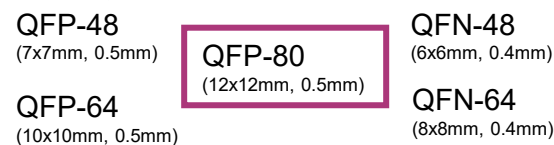
Operating Range

- 1.71 – 3.3V
- <1 – 10 µA low power modes
- -40 – 105°C Ta

Status/Availability

- In Development, prelim. DS available
- Samples & EVK available
- Qualified samples Q3 2024
- SOP: Q4 2024

Packages





Part of your life. Part of tomorrow.