

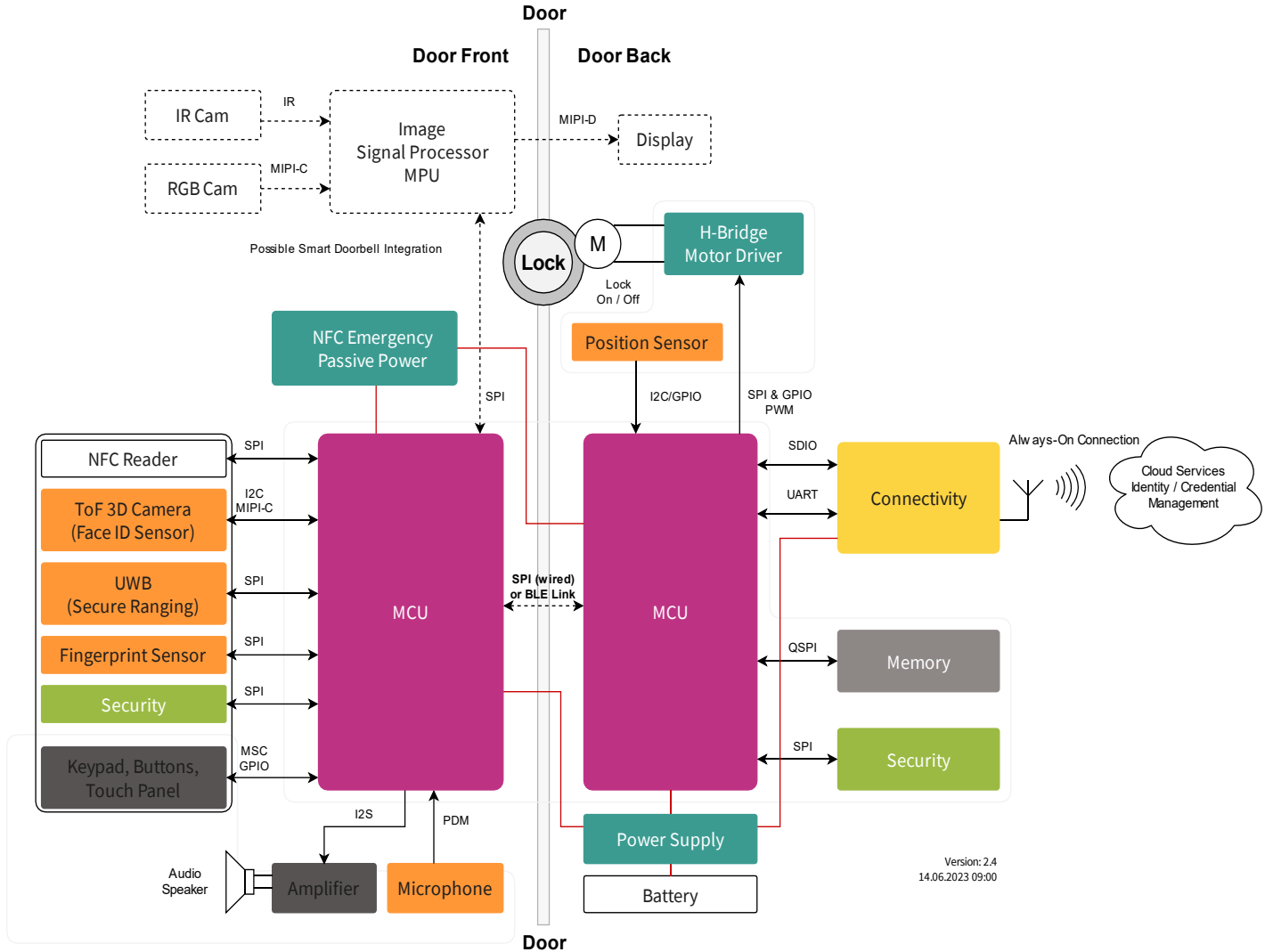


Innovative Smart Door Lock Solutions

André Köchling
March 2024



Overview



Version: 2.4
14.06.2023 09:00

- Find out more details:
- [PSoC™ 6 family](#)
 - [PSoC™ 4 CapSense](#)
 - [AIROC™ Wi-Fi + Bluetooth® Combos](#)
 - [OPTIGA™ family](#)
 - [High performance memory solutions](#)



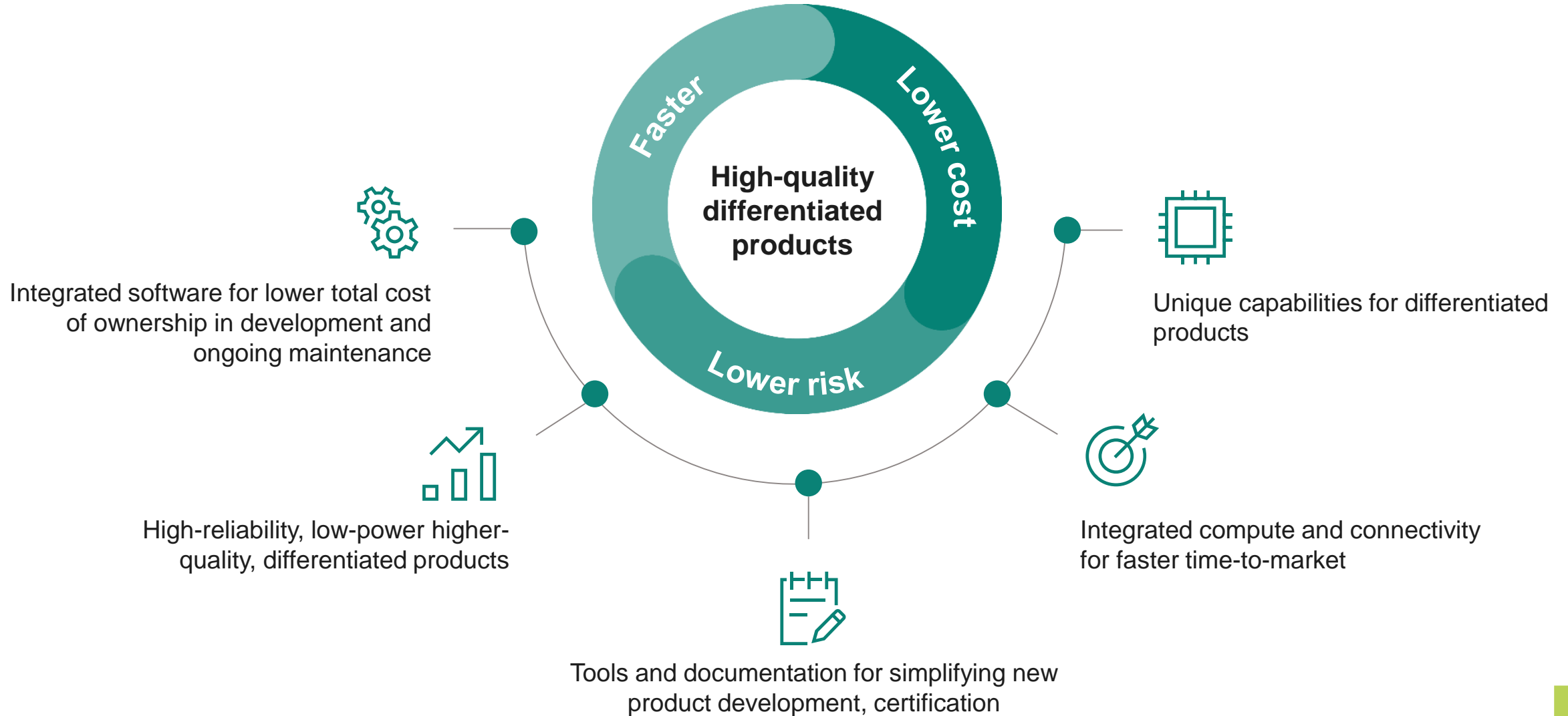


PSoC™ 6 MCU Portfolio Overview

February 2024

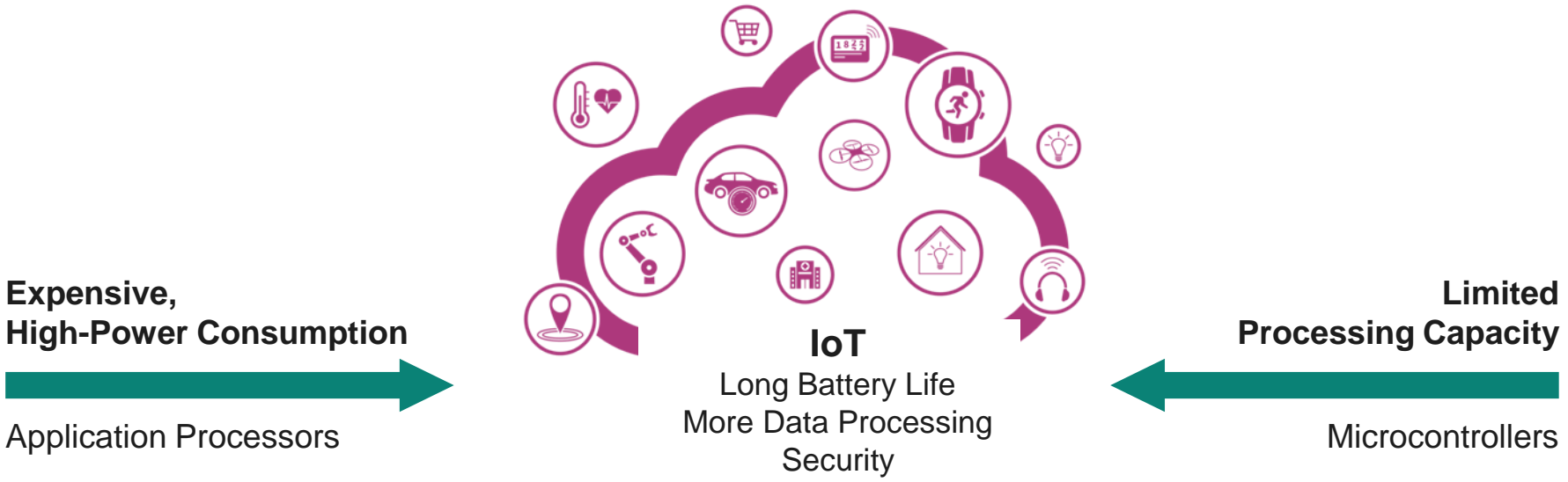


Infineon MCUs: Enabling developers to get innovative products to market faster at lower system cost



PSoC™ 6 MCUs: Purpose-Built for the IoT

Emerging IoT devices require increased processing and security without a power or cost penalty



Infineon's PSoC™ 6 MCUs deliver:

Ultra-low Power

Flexibility

Security



PSoC™ 6: MCU overview

Features

High performance, low power

- Dual-core architecture: 150-MHz Arm® Cortex®-M4, and 100-MHz Arm® Cortex®-M0+
- On chip memory: up to 1024 KB SRAM, up to 2048 KB Flash
- Ultra-low-power (0.9 V) and low-power (1.1 V) operation modes
- Multiple device low power modes – Hibernate, Deep Sleep, Sleep, Active. Low power analog operation

Robust security features

- Advanced cryptographic accelerator and True random number generator
- One-time programmable eFUSE for secure key storage
- Secure over-the-air (OTA) firmware update with read-while-write Flash technology for firmware updates

Integration

- 4th generation CAPSENSE™ to integrate robust touch user interface in single MCU
- Segment LCD drive, serial interface display drivers
- Quad SPI Memory I/F for memory expansion
- Smart I/O to integrate external digital glue logic in MCU
- Universal Digital Blocks (UDBs) to implement CPLD, mini-FPGA logic in MCU

Rich analog peripherals

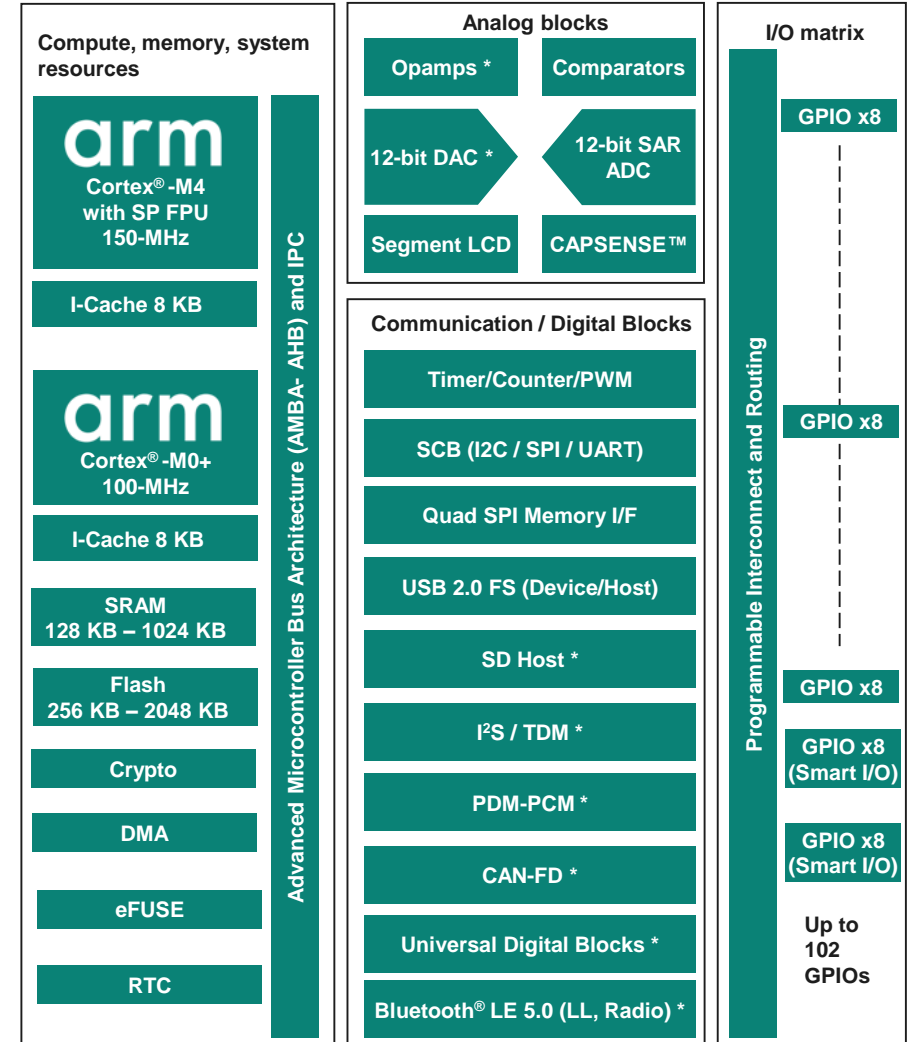
- 12-bit SAR ADC, 12-bit DAC, OpAmps, Low power comparators. Low power analog operation

Digital blocks and communication interfaces

- Highly configurable 16-bit, 32-bit Timers, Counters, PWMs
- Serial Communication Blocks (I2C / SPI / UART) for digital sensor / host MCU interfaces
- I2S / TDM, PDM-PCM converter for audio applications
- SD Host Controller (SDHC), USB 2.0 Full Speed (Host and Device)
- CAN-FD for industrial applications

Wide variety of package options

- 128-TQFP, 124-BGA, 100-WLCSP, 100-TQFP, 80-TQFP, 80-WLCSP, 68-QFN, 64-TQFP, 49-WLCSP



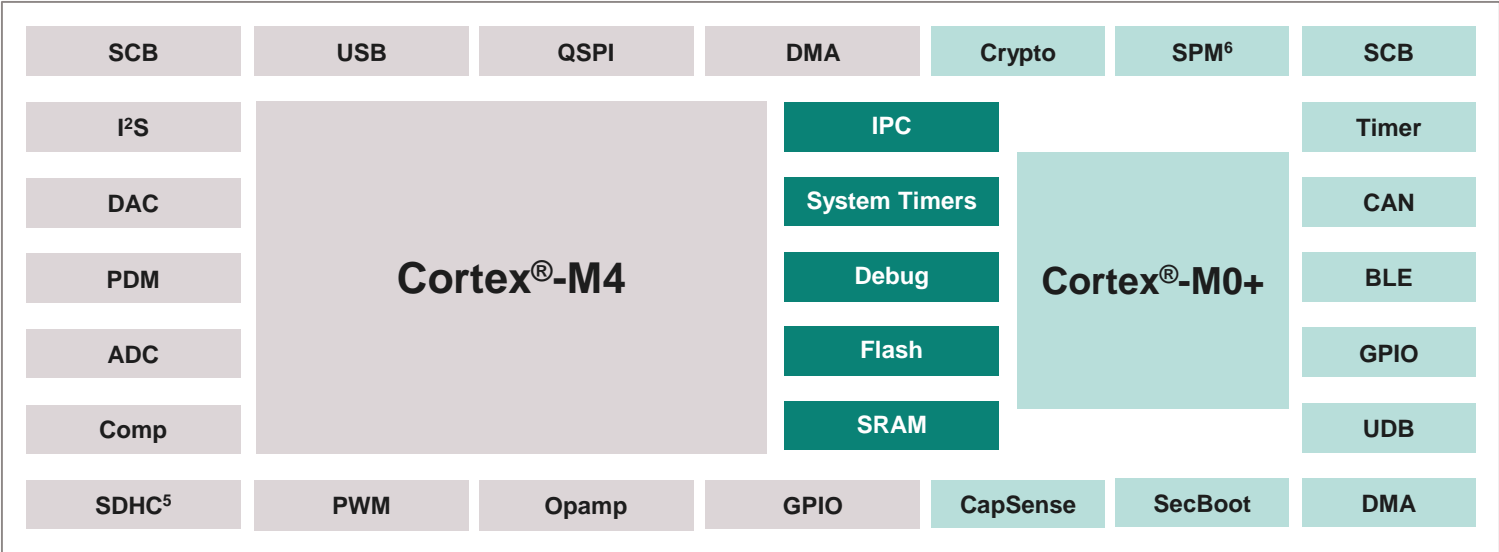
PSoC™ 6: High-performance dual-core architecture for the IoT

Most flexible, high-performance, dual-core architecture designed specifically for the IoT

- Multiple wired and wireless connectivity options such as BLE, Wi-Fi, and USB to support Internet, cloud-based services
- Software-defined peripherals to create custom AFEs and to support last-minute design changes while minimizing PCB re-spins
- CapSense™, the industry's best capacitive sensing solution, to support sleek, next-generation user-interfaces
- High-performance dual-core architecture to optimize system power consumption and performance

PSoC™ 6 High-Performance, Dual-Core MCU Architecture

Cortex®-M4
Usage Examples:
 RTOS
 Displays
 Sensor Analytics
 Audio Interface
 USB/BLE HCI



Cortex®-M0+
Usage Examples:
 BLE Stack
 CapSense
 Secure Functions
 I/O Data Control
 Sensor Aggregation

Main Core Resources
 System Resources
 Auxiliary Core Resources



PSoC™ 6: Ultra-low-power IoT solution

Power Mode	Current Consumption	Code Execution	Digital Peripherals Available	Analog Peripherals Available	Clock Sources Available	Wake-Up Sources	Wake-Up Time
Active (M4)	5.82 mA @ 150 MHz (LP) 1.43 mA @ 50 MHz (ULP)	Yes	All	All	All	-	-
Active (M0+)	3.43 mA @ 100 MHz (LP) 0.75 mA @ 25 MHz (ULP)	Yes	All	All	All	-	-
Low-Power Active (M4)	380 µA @ 8 MHz	Yes	All	All	8-MHz IMO	-	-
Deep-Sleep	7.0 µA	No	WDT, SCB	Comparator, POR, BOD	32-kHz ILO	Comparator, GPIO, WDT, DS-SCB	10 µs, 100 µs
Hibernate	300 nA	No	No	Comparator, POR	No	Comparator, GPIO, RTC	500 µs

The ultra-low-power 40 nm, PSoC™ 6 MCU architecture optimizes power and performance with:

- Dynamic voltage and frequency scaling enabling both performance- and power-critical processing
- A dual-core architecture, where the Cortex®-M0+ can act as an offload engine for power efficiency, allowing the Cortex®-M4 core to sleep
- An ultra-low-power system and peripherals, where the Cortex®-M4 consumes 22 µA/MHz and the Cortex®-M0+ consumes 15 µA/MHz

PSoC™ 6 sets a new, industry-leading low-power benchmark for today's IoT devices

Best-in-class Wi-Fi connectivity options enabled with ModusToolbox™



PSoC™ 6 MCUs

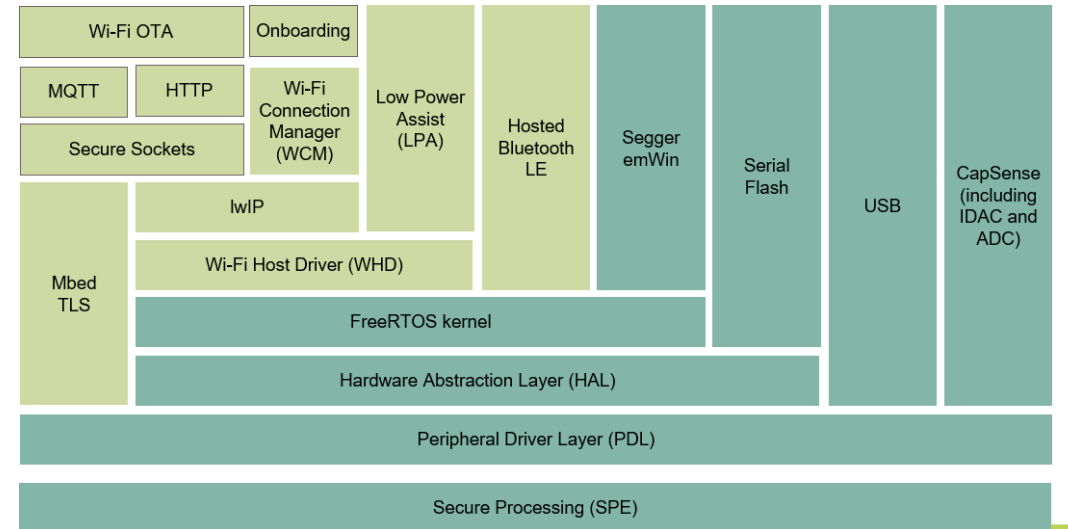
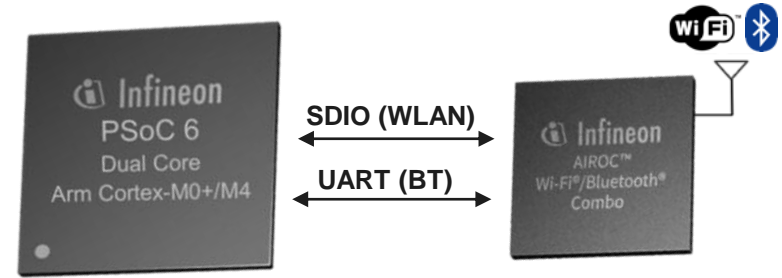
- Power optimized for battery operated products
- Integrated security, in-line with the latest standards

Partnered with AIROC™ Connectivity

- Wi-Fi MAC/radio, and Bluetooth® controller/radio functionality
- Support for latest Wi-Fi security standards
- Low-power radio operation
- Certified modules to reduce hardware design and costs

Made simple with ModusToolBox

- Complete set of libraries covering device drivers, board support packages (BSPs), RTOS, connectivity stacks, graphics, and security
- Documented and tested code examples to get started quickly
- Flexible connectivity solution with support for AWS, Google, Microsoft® Azure, etc.



PSoC™ 6: Built-in hardware-based security for the IoT

Supports multiple, simultaneous secured environments without external memories or secured elements

- Offers scalable secure memory for multiple, independent user-defined security policies
- Implements industry-standard cryptographic algorithms including elliptical-curve cryptography and advanced encryption standard (AES) with an integrated hardware-based secure coprocessor
- Provides secured, internal storage for firmware, applications, and secured assets such as cryptographic keys

PSoC™ 6 delivers an integrated, hardware-based Secured Execution Environment with secure data storage for IoT solutions



PSoC™ 6 establishes the new standard for IoT security with a trusted product

Consumer/IoT Focus: Application and portfolio mapping

Home automation



Human-machine interface



Wearables



Battery-powered applications



Portable medical



Applications



Infineon MCUs deliver

- HMI: Touch/Proximity Sensing
- Analog/Digital Sensor Interfaces
- Connectivity

- CAPSENSE™
- MagSense
- Gestures
- Wake-word and Voice commands

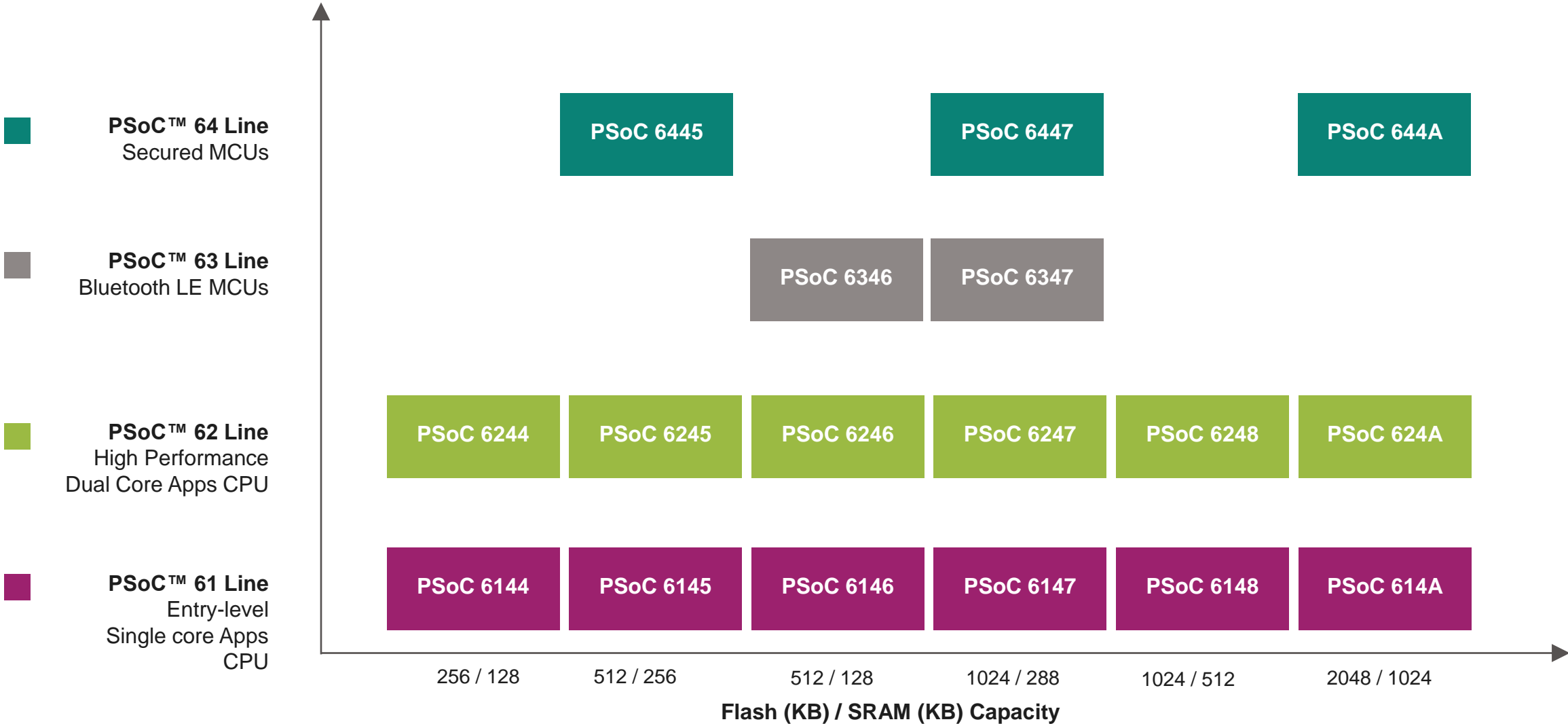
- Ultra-low power
- High performance and small form factor
- Connectivity

- Ultra-low power
- High-performance and small form factor
- Connectivity

- Ultra-low power
- Connectivity
- Customizable Analog Front End
- Reliability

PSoC™

PSoC™ 6 MCU Portfolio – High level view



PSoC™ 6 MCU Portfolio – detailed view

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>CY8C614A, CY8C6148</p> <p>Flash / SRAM (614A) – 2048 KB / 1024 KB Flash / SRAM (6148) – 1024 KB / 512 KB</p> <p>Key Peripherals – SD Host x 2, SCB x 13, PDM-PCM, I2S, TCPWM x 32, 102 IOs</p> <p>Packages – 128-TQFP, 124-BGA, 102-WLCSP, 68-QFN</p>	<p>CY8C624A, CY8C6248</p> <p>Flash / SRAM (624A) – 2048 KB / 1024 KB Flash / SRAM (6248) – 1024 KB / 512 KB</p> <p>Key Peripherals – SD Host x 2, SCB x 13, PDM-PCM, I2S, TCPWM x 32, 102 IOs</p> <p>Packages – 128-TQFP, 124-BGA, 102-WLCSP, 68-QFN</p>		<p>CY8C614A, CY8C6148</p> <p>Flash / SRAM (614A) – 2048 KB / 1024 KB Flash / SRAM (6148) – 1024 KB / 512 KB</p> <p>Key Peripherals – SD Host x 2, SCB x 13, PDM-PCM, I2S, TCPWM x 32, 102 IOs</p> <p>Packages – 128-TQFP, 124-BGA, 102-WLCSP, 68-QFN</p>
<p>CY8C61x7, CY8C61x6</p> <p>Flash / SRAM (6147) – 1024 KB / 288 KB Flash / SRAM (6146) – 512 KB / 128 KB</p> <p>Key Peripherals – SCB x 9, PDM-PCM, I2S, 12-bit VDAC, Opamps x2, TCPWM x 32, 100 IOs</p> <p>Packages – 124-BGA, 80-WLCSP</p>	<p>CY8C6247, CY8C6246</p> <p>Flash / SRAM (6247) – 1024 KB / 288 KB Flash / SRAM (6246) – 512 KB / 128 KB</p> <p>Key Peripherals – SCB x 9, PDM-PCM, I2S, 12-bit VDAC, Opamps x2, TCPWM x 32, 100 IOs</p> <p>Packages – 124-BGA, 80-WLCSP</p>	<p>CY8C6347, CY8C6346</p> <p>Flash / SRAM (6347) – 1024 KB / 288 KB Flash / SRAM (6346) – 512 KB / 128 KB</p> <p>Key Peripherals – BLE v5.0, SCB x 9, PDM-PCM, I2S, 12-bit VDAC, Opamps x2, TCPWM x 32, 84 IOs</p> <p>Packages – 124-BGA, 116-BGA, 104-M-CSP, 68-QFN</p>	<p>CY8C614A, CY8C6148</p> <p>Flash / SRAM (614A) – 2048 KB / 1024 KB Flash / SRAM (6148) – 1024 KB / 512 KB</p> <p>Key Peripherals – SD Host x 2, SCB x 13, PDM-PCM, I2S, TCPWM x 32, 102 IOs</p> <p>Packages – 128-TQFP, 124-BGA, 102-WLCSP, 68-QFN</p>
<p>CY8C6145</p> <p>Flash / SRAM – 512 KB / 256 KB</p> <p>Key Peripherals – SD Host, CAN-FD, SCB x 6, TCPWM x 12, 64 IOs</p> <p>Packages – 100-TQFP, 68-QFN, 49-WLCSP</p>	<p>CY8C6245</p> <p>Flash / SRAM – 512 KB / 256 KB</p> <p>Key Peripherals – SD Host, CAN-FD, SCB x 6, TCPWM x 12, 64 IOs</p> <p>Packages – 100-TQFP, 68-QFN, 49-WLCSP</p>		<p>CY8C614A, CY8C6148</p> <p>Flash / SRAM (614A) – 2048 KB / 1024 KB Flash / SRAM (6148) – 1024 KB / 512 KB</p> <p>Key Peripherals – SD Host x 2, SCB x 13, PDM-PCM, I2S, TCPWM x 32, 102 IOs</p> <p>Packages – 128-TQFP, 124-BGA, 102-WLCSP, 68-QFN</p>
<p>CY8C6144</p> <p>Flash / SRAM – 256 KB / 128 KB</p> <p>Key Peripherals – CAN-FD, 12-bit VDAC, 12-bit ADC x2, Opamps x2, SCB x 6, TCPWM x 12, 62 IOs</p> <p>Packages – 80-TQFP, 68-QFN, 64-TQFP</p>	<p>CY8C6244</p> <p>Flash / SRAM – 256 KB / 128 KB</p> <p>Key Peripherals – CAN-FD, 12-bit VDAC, 12-bit ADC x2, Opamps x2, SCB x 6, TCPWM x 12, 62 IOs</p> <p>Packages – 80-TQFP, 68-QFN, 64-TQFP</p>		<p>CY8C614A, CY8C6148</p> <p>Flash / SRAM (614A) – 2048 KB / 1024 KB Flash / SRAM (6148) – 1024 KB / 512 KB</p> <p>Key Peripherals – SD Host x 2, SCB x 13, PDM-PCM, I2S, TCPWM x 32, 102 IOs</p> <p>Packages – 128-TQFP, 124-BGA, 102-WLCSP, 68-QFN</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



Product Portfolio Details

PSoC™ 6 MCU – CY8C6xxA, CY8C6xx8 overview

Features

MCU Subsystem

- Dual-core architecture: 150-MHz Arm® Cortex®-M4 and 100-MHz Arm® Cortex®-M0+, DMA controllers
- Ultra-low-power (0.9 V) and low-power (1.1 V) operation mode
- **Up to 2048 KB Flash, 1024 KB SRAM.** Option for QSPI external flash for XIP, data storage

Analog Blocks

- 1x 12-bit 2 MSPS SAR ADC, 16 channel hardware sequencer
- 2x Low power comparators
- CAPSENSE™ capacitive-sensing block, Segment LCD drive capability

Digital Blocks and Communication Interfaces

- **I2S and PDM-PCM converter for interfacing to audio codecs, PDM microphones**
- **2x SD Host Controller/eMMC/SD controllers**
- Quad SPI External Memory Interface with the on-the-fly encryption/decryption
- 24 x 16-bit and 8 x 32-bit timer/counter/pulse-width modulation blocks (TCPWM)
- 12 x serial communication blocks (SCBs) – I2C (12) / SPI (12) / UART (8), deep-sleep SCB – I2C / SPI
- USB 2.0 FS (Host and Device)

Security Features

- Advanced cryptographic coprocessor (Crypto) and True random number generator
- One-time programmable eFUSE for secure key storage
- Secure over-the-air (OTA) firmware update with read-while-write Flash technology for firmware updates

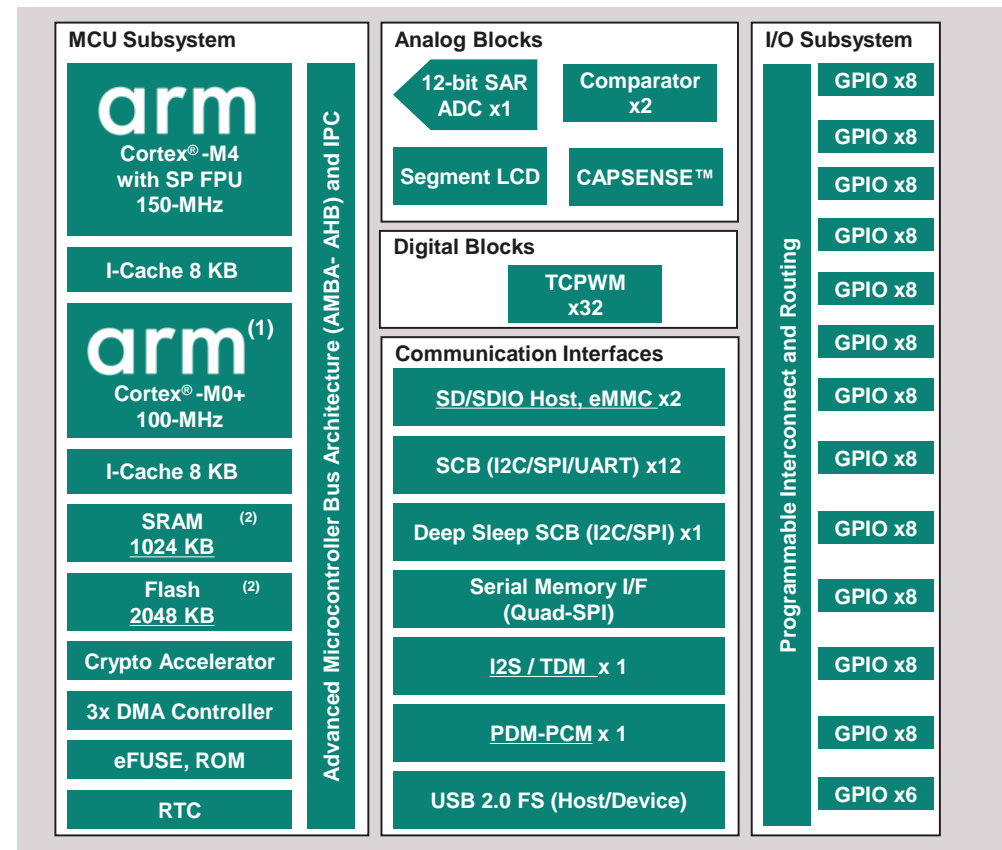
I/O Subsystem: Up to 102 GPIOs

MPN Options

- Packages: 128-TQFP (102 IOs), 124-BGA (100 IOs), 100-WLCSP (82 IOs), 68-QFN (53 IOs)
- Available in the PSoC™ 61 Programmable Line (CY8C61x8, CY8C61xA), PSoC™ 62 Performance Line (CY8C62x8, CY8C62xA), PSoC™ 64 Secured MCU Line (CYB0644A)

Collateral

Documentation: [PSoC™ 6 Documentation Portal](#)



(1) Arm® Cortex®-M0+ CPU not available for user applications in PSoC™ 61 family

(2) MPNs also available in the 1024 KB Flash, 512 KB SRAM configuration

Availability

In Production



PSoC™ 6 MCU – CY8C6xx7, CY8C6xx6 overview

Features

MCU Subsystem

- Dual-core architecture: 150-MHz Arm® Cortex®-M4 and 100-MHz Arm® Cortex®-M0+, DMA controllers
- Ultra-low-power (0.9 V) and low-power (1.1 V) operation mode
- Up to 1024 KB Flash, 288 KB SRAM. Option for QSPI external flash for XIP, data storage

Analog Blocks

- 1x 12-bit 1 MSPS SAR ADC, 16 channel hardware sequencer
- 1x 12-bit Voltage DAC, 2x Opamps, 2x Low power comparators
- CAPSENSE™ capacitive-sensing block, Segment LCD drive capability

Digital Blocks and Communication Interfaces

- 12 x universal digital blocks (UDBs): custom digital peripherals
- I2S and PDM-PCM converter for interfacing to audio codecs, PDM microphones
- Quad SPI External Memory Interface with the on-the-fly encryption/decryption
- 24 x 16-bit and 8 x 32-bit timer/counter/pulse-width modulation blocks (TCPWM)
- 8 x serial communication blocks (SCBs) – I2C / SPI / UART, deep-sleep SCB – I2C / SPI
- USB 2.0 FS (Host and Device)

Security Features

- Advanced cryptographic coprocessor (Crypto) and True random number generator
- One-time programmable eFUSE for secure key storage
- Secure over-the-air (OTA) firmware update with read-while-write Flash technology for firmware updates

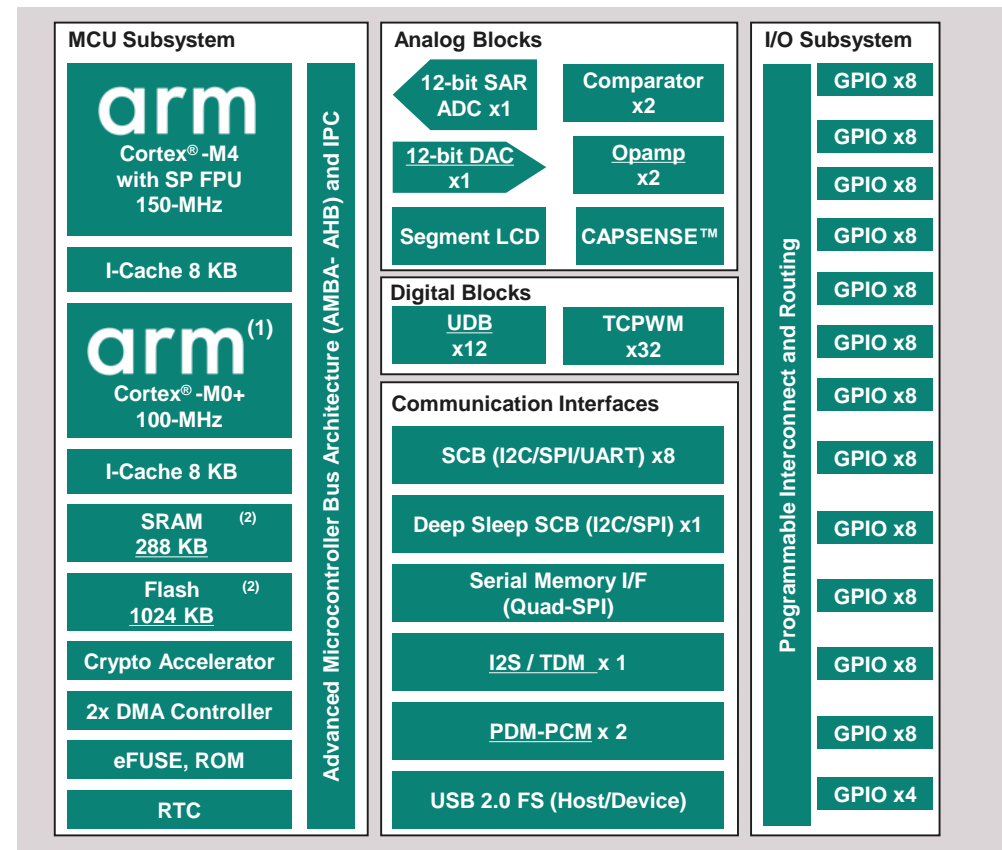
I/O Subsystem: Up to 100 GPIOs

MPN Options

- Packages: 124-BGA (100 IOs), 80-WLCSP (62 IOs)
- Available in the PSoC™ 61 Programmable Line (CY8C6146, CY8C6147), PSoC™ 62 Performance Line (CY8C6246, CY8C6247), PSoC™ 64 Secured MCU Line (CYB06447)

Collateral

Documentation: [PSoC™ 6 Documentation Portal](#)



(1) Arm® Cortex®-M0+ CPU not available for user applications in PSoC™ 61 family

(2) MPNs also available in the 512 KB Flash, 128 KB SRAM configuration

Availability

In Production



PSoC™ 6 MCU – CY8C6xx5 overview

Features

MCU Subsystem

- Dual-core architecture: 150-MHz Arm® Cortex®-M4 and 100-MHz Arm® Cortex®-M0+, DMA controllers
- Ultra-low-power (0.9 V) and low-power (1.1 V) operation mode
- Up to 512 KB Flash, 256 KB SRAM. Option for QSPI external flash for XIP, data storage

Analog Blocks

- 1x 12-bit 2 MSPS SAR ADC, 16 channel hardware sequencer
- 2x Low power comparators operational in hibernate mode
- CAPSENSE™ capacitive-sensing block, Segment LCD drive capability

Digital Blocks and Communication Interfaces

- Quad SPI External Memory Interface with the on-the-fly encryption/decryption
- 8 x 16-bit and 4 x 32-bit timer/counter/pulse-width modulation blocks (TCPWM)
- 6 x serial communication blocks (SCBs) – I2C / SPI / UART, deep-sleep SCB – I2C / SPI
- **SD Host Controller/eMMC/SD controller**
- USB 2.0 FS (Host and Device)
- **CAN-FD**

Security Features

- Advanced cryptographic coprocessor (Crypto) and True random number generator
- One-time programmable eFUSE for secure key storage
- Secure over-the-air (OTA) firmware update with read-while-write Flash technology for firmware updates

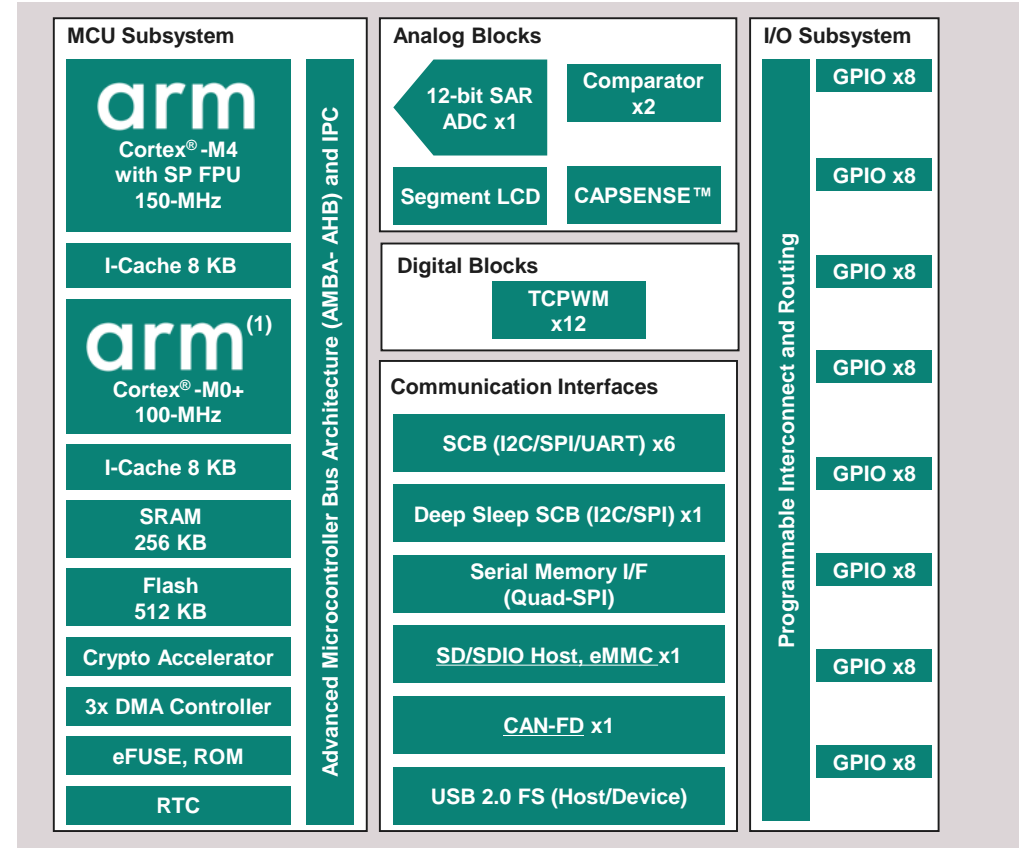
I/O Subsystem: Up to 64 GPIOs

MPN Options

- Packages: 100-TQFP (64 IOs), 68-QFN (53 IOs), 49-WLCSP (37 IOs)
- Available in the PSoC™ 61 Programmable Line (CY8C6145), PSoC™ 62 Performance Line (CY8C6245), PSoC™ 64 Secured MCU Line (CYB06445)

Collateral

Documentation: [PSoC™ 6 Documentation Portal](#)



(1) Arm® Cortex®-M0+ CPU not available for user applications in PSoC™ 61 family

Availability

In Production



PSoC™ 6 MCU – CY8C6xx4 overview

Features

MCU Subsystem

- Dual-core architecture: 150-MHz Arm® Cortex®-M4 and 100-MHz Arm® Cortex®-M0+, DMA controllers
- Ultra-low-power (0.9 V) and low-power (1.1 V) operation mode
- Up to 256 KB Flash, 128 KB SRAM. Option for QSPI external flash for XIP, data storage

Analog Blocks

- **2x 12-bit 2 MSPS SAR ADC with synchronized sampling, 16 channel hardware sequencer**
- **1x 12-bit Voltage DAC, 2x Opamps, 2x Low power comparators**
- **ADCs, DAC, Opamps, Comparators operational in active, sleep, and deep sleep modes**
- CAPSENSE™ capacitive-sensing block, Segment LCD drive capability

Digital Blocks and Communication Interfaces

- Quad SPI External Memory Interface with the on-the-fly encryption/decryption
- 8 x 16-bit and 4 x 32-bit timer/counter/pulse-width modulation blocks (TCPWM)
- 5 x serial communication blocks (SCBs) – I2C / SPI / UART, deep-sleep SCB – I2C / SPI
- USB 2.0 FS (Host and Device)
- **CAN-FD**

Security Features

- Advanced cryptographic coprocessor (Crypto) and True random number generator
- One-time programmable eFUSE for secure key storage
- Secure over-the-air (OTA) firmware update with read-while-write Flash technology for firmware updates

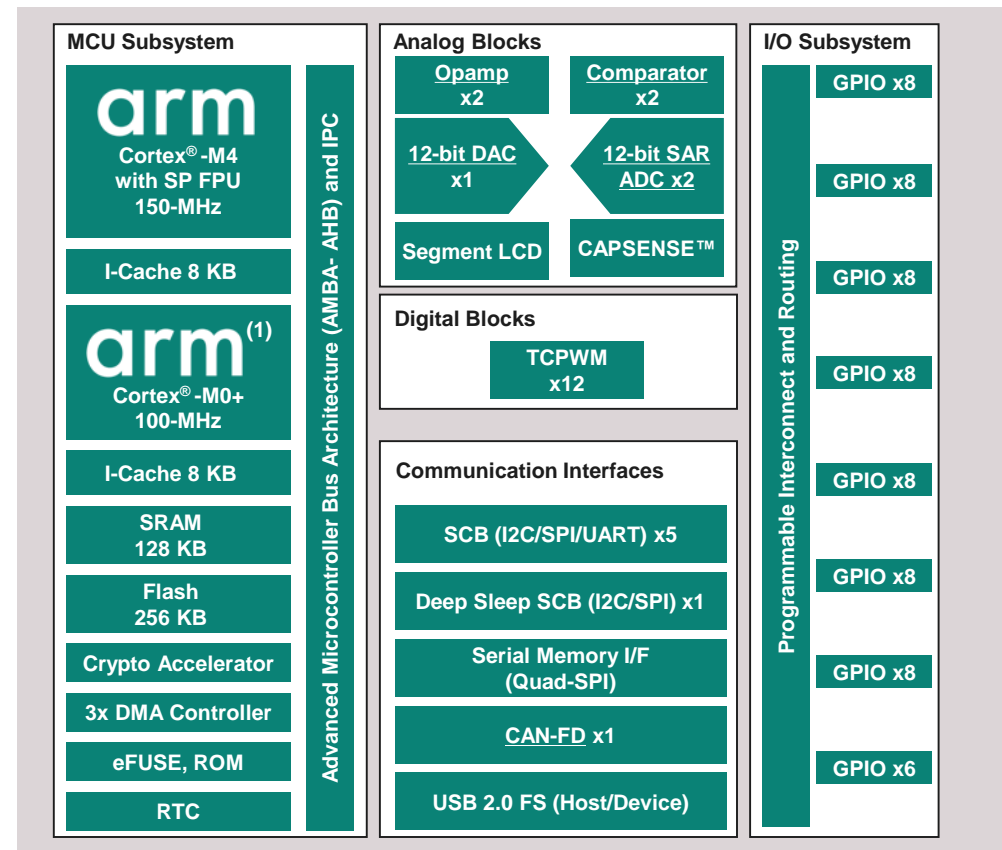
I/O Subsystem: Up to 62 GPIOs

MPN Options

- Packages: 80-TQFP (62 IOs), 64-TQFP (54 IOs), 68-QFN (52 IOs)
- Available in the PSoC™ 61 Line (CY8C6144), PSoC™ 62 Line (CY8C6244)

Collateral

Documentation: [PSoC™ 6 Documentation Portal](#)



(1) Arm® Cortex®-M0+ CPU not available for user applications in PSoC™ 61 family

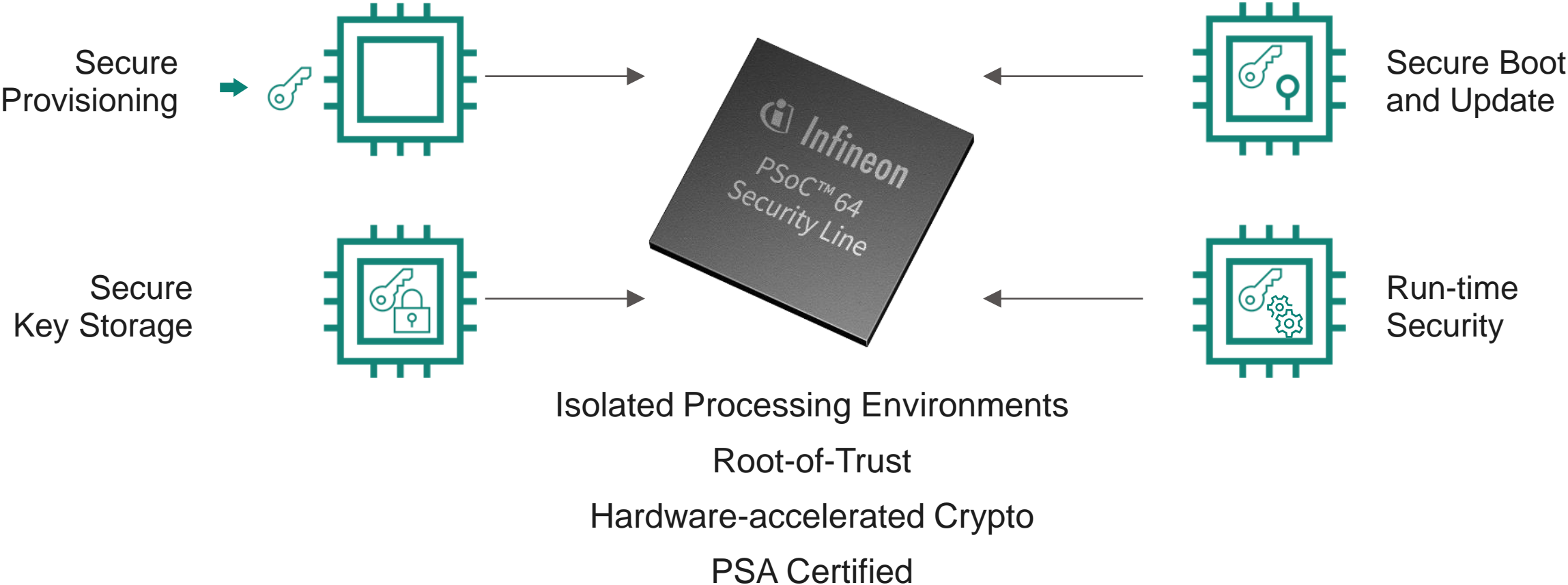
Availability

In Production



PSoC™ 64 Secured MCU Features

Trusted IoT devices require PSoC™ 64

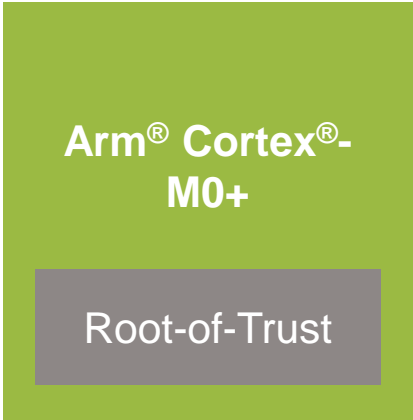


The best solution for managing data confidentiality, integrity, and authenticity

Isolated processing environments

Non-secure processing environment (NSPE)

The Cortex[®]-M4 MCU enables you to develop your application and utilize IoT platform software libraries to establish a secure cloud connection.

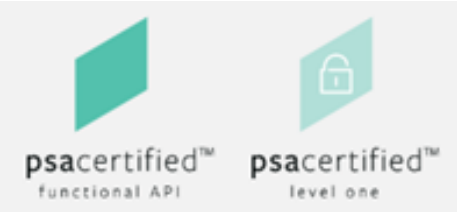
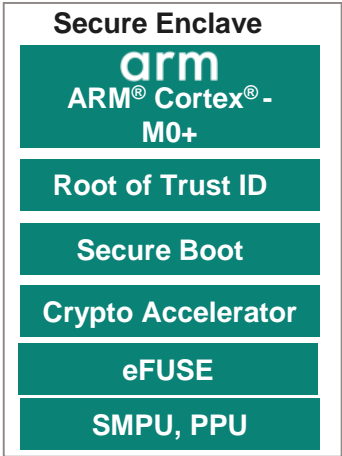


Secure processing environment (SPE)

The Cortex[®]-M0+ is used to establish an isolated processing environment for trusted applications.

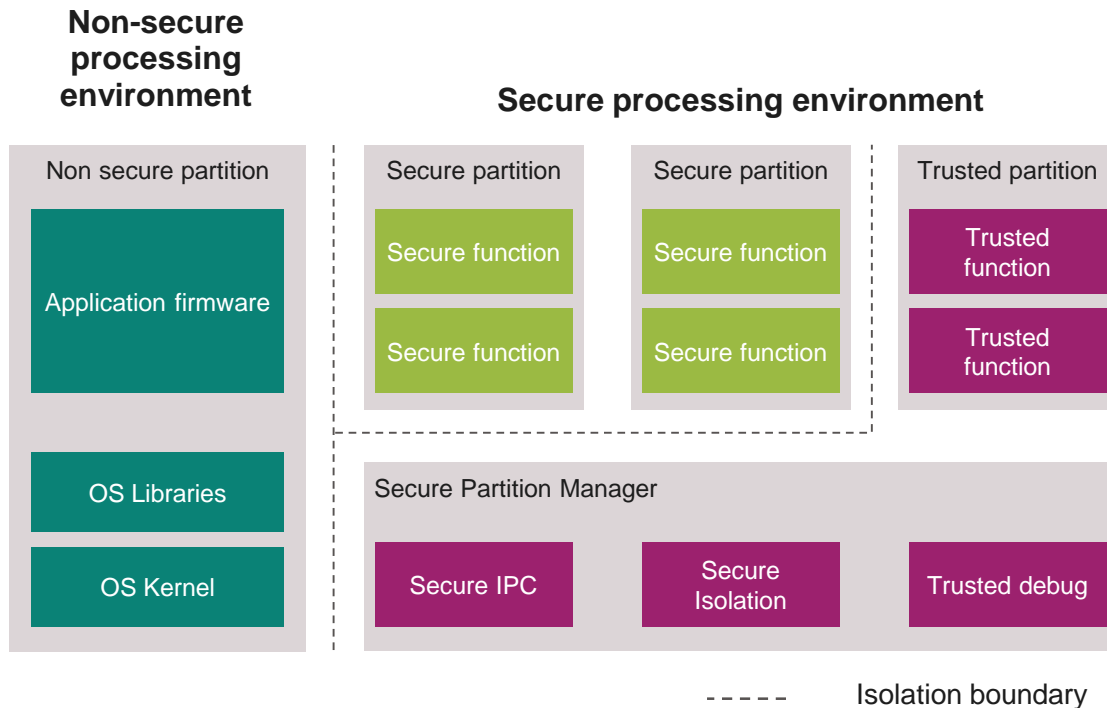
Hardware-based Root of Trust (RoT) and trusted services

Further isolated from the SPE is a hardware-based root-of-trust with trusted services. The root-of-trust is an immutable, unclonable identity. It securely stores keys and performs security services such as secure boot, attestation, and firmware over-the-air (FOTA) updates.



Arm® Platform Security Architecture

Isolated processing environments



Arm® Platform Security Architecture















- Arm® PSA is a framework for securing connected embedded systems
- Trusted Firmware-M (open-sourced security firmware) provides a reference implementation of secure software that complies to PSA
www.trustedfirmware.org
- PSA APIs provide standard interface to underlying security functions, enabling code portability
- Arm® PSA offers a certification program assuring products adhere to PSA security guidelines
- Validated through approved, 3rd-party security test houses

PSoC™ 64 Secured MCUs are Arm® PSA certified

MCU product longevity plan

Infineon supports MCUs for a minimum of **15 years** from the date of first sale (the "Supply Period")

Details on our [website](#)

Product	Product Status	Planned to be available until at least	Family	Longevity - 15 years
 Filter		 Filter	 Filter	 Filter
> CY8C6144AZI-S4F92	 active and preferred	Sep 2036	PSoC 61x4	Yes
> CY8C6144AZQ-S4F92	 active and preferred	Sep 2036	PSoC 61x4	Yes
> CY8C6144AZQ-S4F93	 active and preferred	Sep 2036	PSoC 61x4	Yes
> CY8C6144AZI-S4F82	 active and preferred	Sep 2036	PSoC 61x4	Yes
> CY8C6144AZI-S4F83	 active and preferred	Sep 2036	PSoC 61x4	Yes
> CY8C6144AZI-S4F12	 active and preferred	Sep 2036	PSoC 61x4	Yes
> CY8C6144LQI-S4F92	 active and preferred	Sep 2036	PSoC 61x4	Yes
> CY8C6144AZI-S4F62	 active and preferred	Sep 2036	PSoC 61x4	Yes
> CY8C6144LQI-S4F12	 active and preferred	Sep 2036	PSoC 61x4	Yes
> CY8C6144LQI-S4F62	 active and preferred	Sep 2036	PSoC 61x4	Yes

Start Chatbo



Application Block Diagrams

PSoC™ 62 Line solution example: Connected Smart Home

PSoC™ value

Design problems

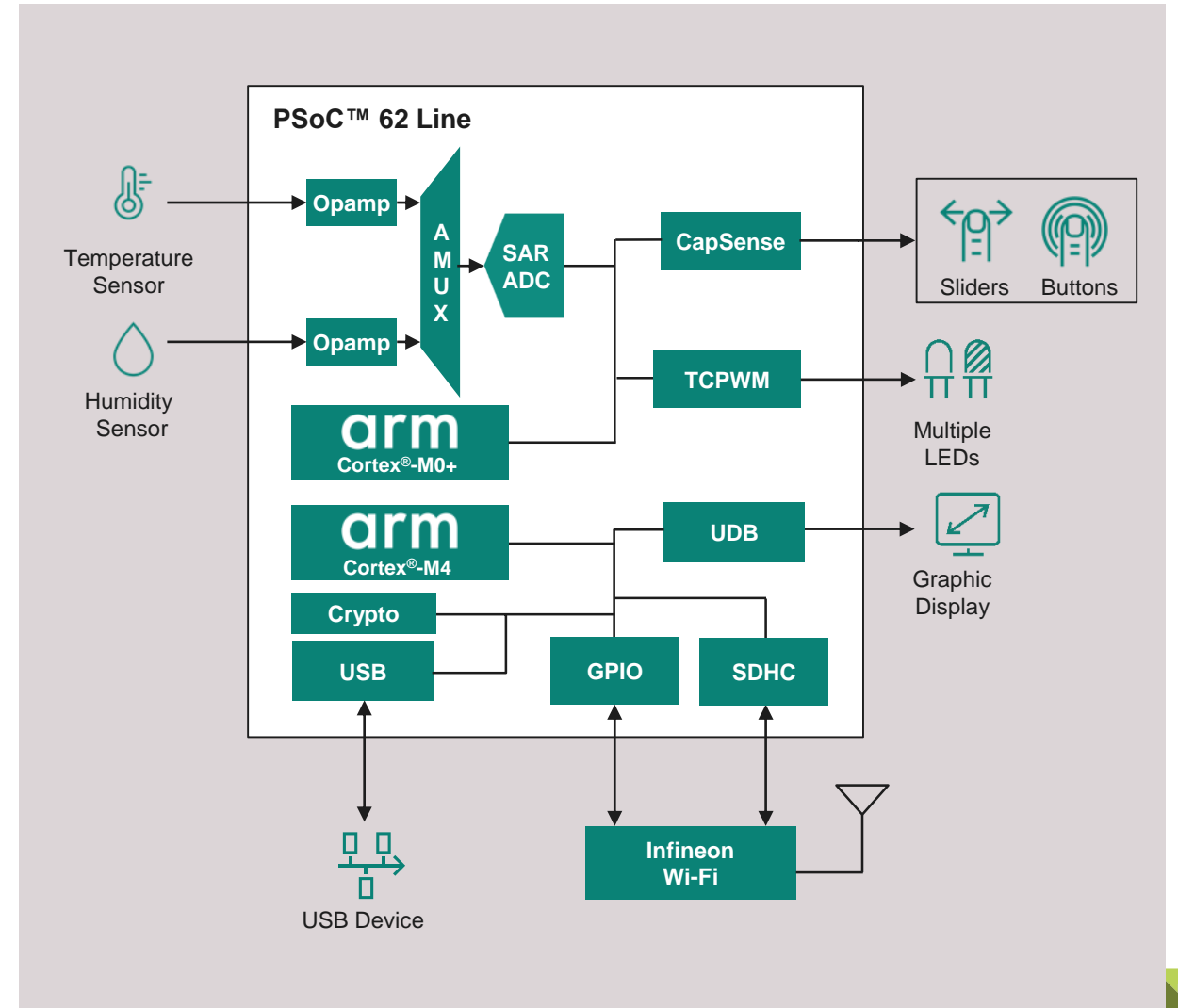
- Perform process-intensive analog and digital sensor aggregation tasks
- Implement a sleek user interface with sliders and buttons
- Provide Internet connectivity with Wi-Fi
- Support secure firmware upgrades over a wireless connection

PSoC™ 6 solution

- Features a high-performance 150-MHz Arm® Cortex®-M4 CPU
- Includes CapSense™ capacitive-sensing for reliable touch-sensing
- Supports Wi-Fi with 2 MB Flash, 1 MB SRAM and SDHC to interface to a Wi-Fi module
- Supports secure OTA firmware upgrades with integrated hardware-based security features like Crypto and memory protection

Thermostat

PSoC™ 6 enables intelligent IoT devices with secure OTA firmware upgrade capabilities, displays, sensor processing, and touch sensing capabilities



PSoC™ 64 Line solution example: Smart Lock

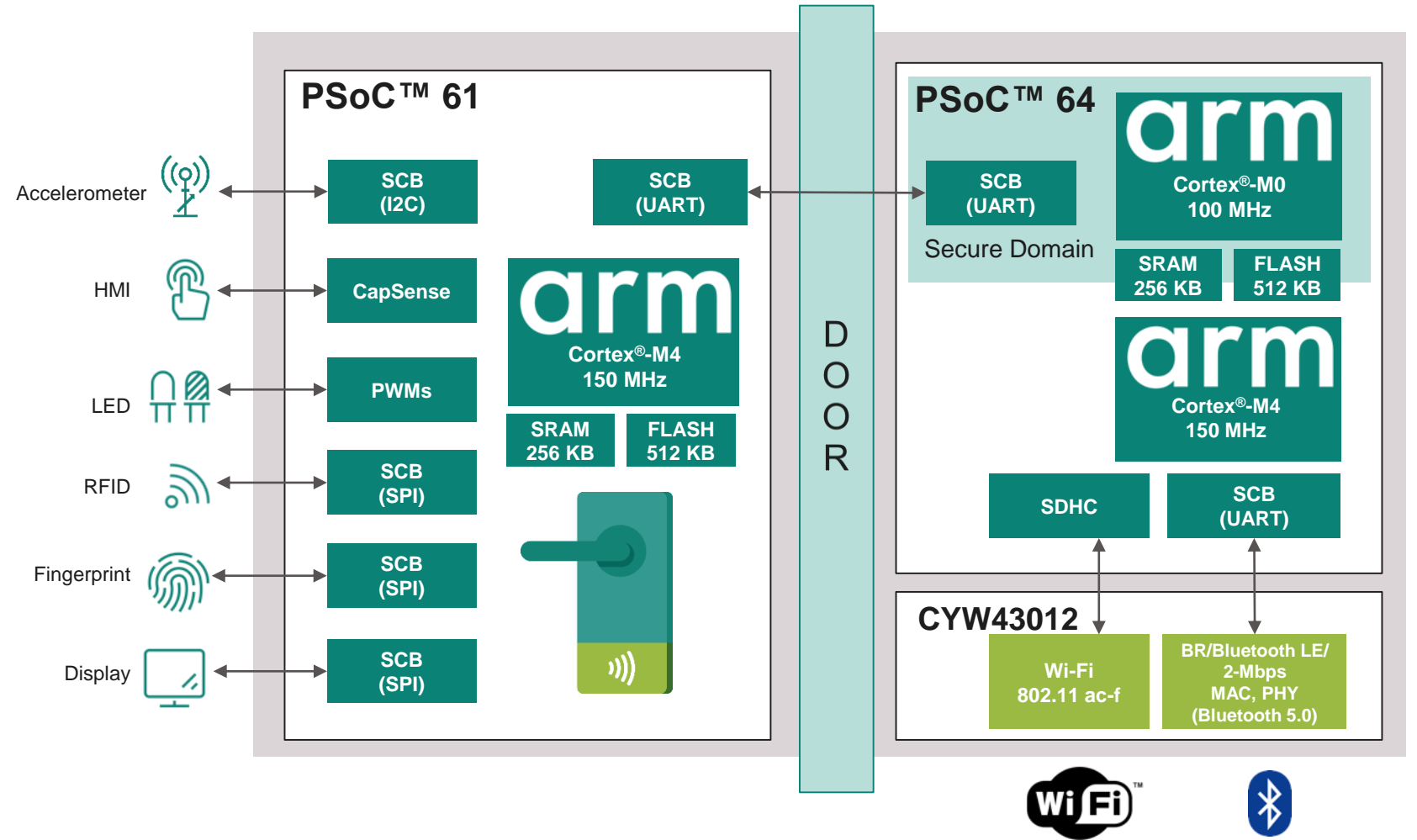
Ultra-Low-Power | Built-in Hardware Security | Bluetooth Mesh

PSoC™ 6 implements

- Host MCU
- Fingerprint Host Processing
- Sensor processing and aggregator
- CapSense user interface
- Peripheral interface (RFID and Display)
- Data logging

CYW43012 implements

- 802.11ac-friendly Wi-Fi connectivity
- Bluetooth 5.0 connectivity
- Bluetooth SIG qualified Mesh
- Industry's lowest power Wi-Fi radio
- True Wi-Fi and Bluetooth coexistence



PSoC™ 63 Line solution example: Wi-Fi Connected Wearable

PSoC™ value

Design challenges

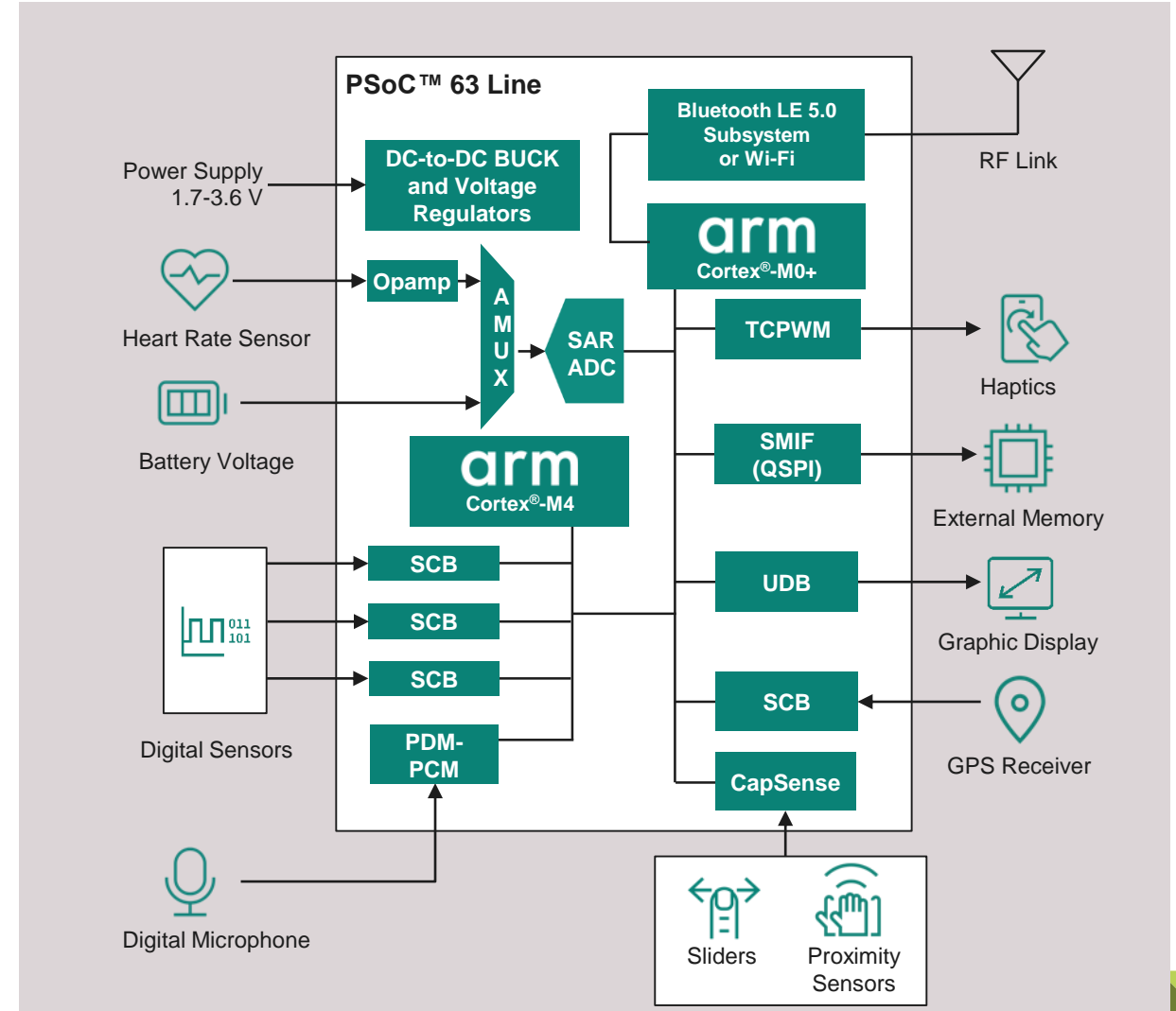
- Perform process-intensive analog and digital sensor aggregation tasks
- Implement a sleek user interface with sliders and proximity sensors
- Support voice commands
- Connect wirelessly over Bluetooth LE or Wi-Fi
- Last as long as possible between battery charges
- Minimize BOM and board space

PSoC™ 6 solution

- Features a high-performance 150-MHz Arm® Cortex®-M4 CPU
- Interfaces to multiple analog and digital sensors with 9x SCBs
- Delivers CapSense® for reliable touch and proximity sensing
- Integrates a PDM-PCM digital microphone interface for voice solutions
- Integrates a low-power Bluetooth LE 5.0 radio or interfaces to a Wi-Fi module
- Enables long battery life with an industry-leading, 22-µA/MHz power consumption in an active power mode
- Delivers a one-chip fitness tracker solution in a 104-M-WLCSP package

M400 Sports Watch by Polar

PSoC™ 6 delivers an ultra-low-power, integrated solution for fitness trackers and smart watches



PSoC™ 6 Solution example: Portable Medical Device

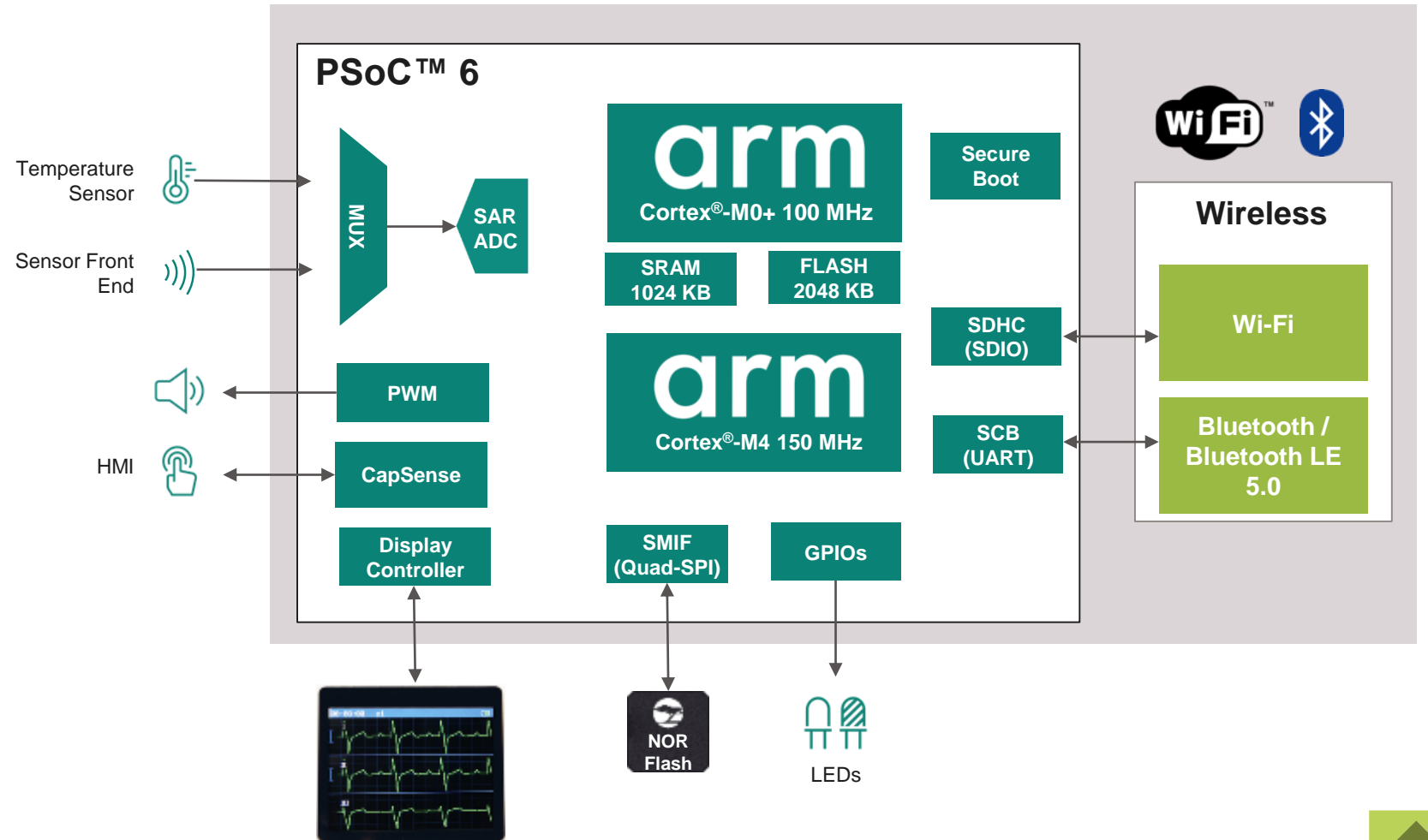
Ultra-Low-Power | Graphics Display | CapSense touch | Wireless Connectivity

PSoC™ 6 implements

- Host MCU with dual core M4 & M0+
- CapSense/touchscreen user interface
- Direct drive TFT/OLED display
- Double frame buffer
- Analog and Digital Sensor interface
- Secure boot w/ hardware based root of trust
- Cloud connectivity for all different cloud partners
- Data logging

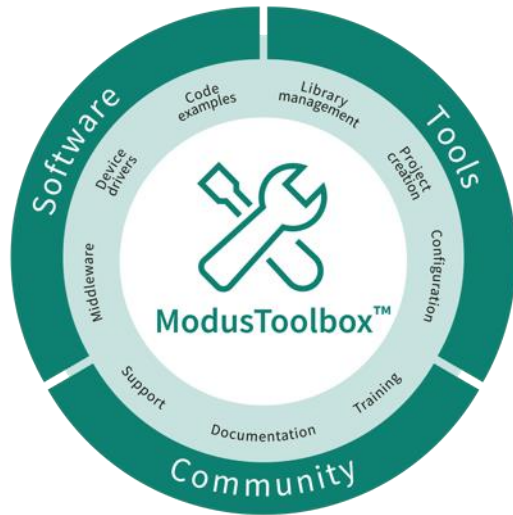
Wi-Fi/Bluetooth for wireless connectivity

- Bluetooth Module
- Dual-mode Bluetooth/Bluetooth LE
- Wi-Fi + Bluetooth Combo



Software and Tools

ModusToolbox™ Software – Overview



- ModusToolbox™ software is a modern, extensible development environment supporting a wide range of Infineon microcontroller devices
- Provided as collection of development tools, libraries, and embedded runtime assets architected to provide a flexible and comprehensive development experience

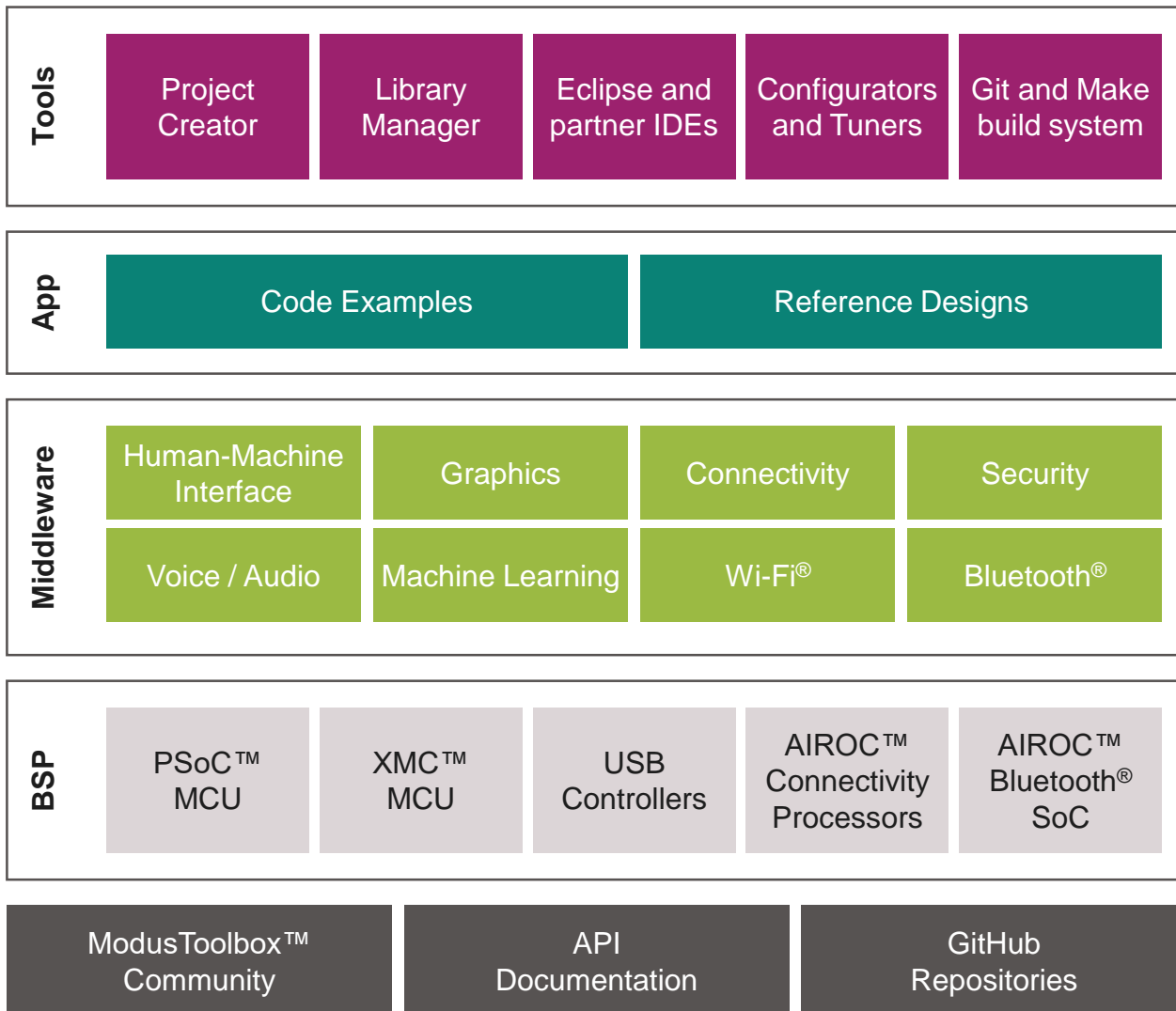
Development Tools

The ModusToolbox™ tools package includes desktop programs that enable the creation of new embedded applications, managing software components, configuring device peripherals and middleware, and embedded development tools for compiling, programming, and debugging.

Run-Time Software

The ModusToolbox™ software includes an extensive collection of GitHub-hosted repositories comprised of code examples, board support packages, middleware, and application support.

ModusToolbox™ Software – Enabling efficient development



ModusToolbox™ provide enablement throughout the application development process

- Tools, IDEs, and Configurators
- Application Development Resources
- Middleware from Infineon and the ecosystem
- Board Support Packages / Device Packages
- Support and Documentation Resources
- Training Manuals – hosted in GitHub repo



ModusToolbox™ Software – Development workflow



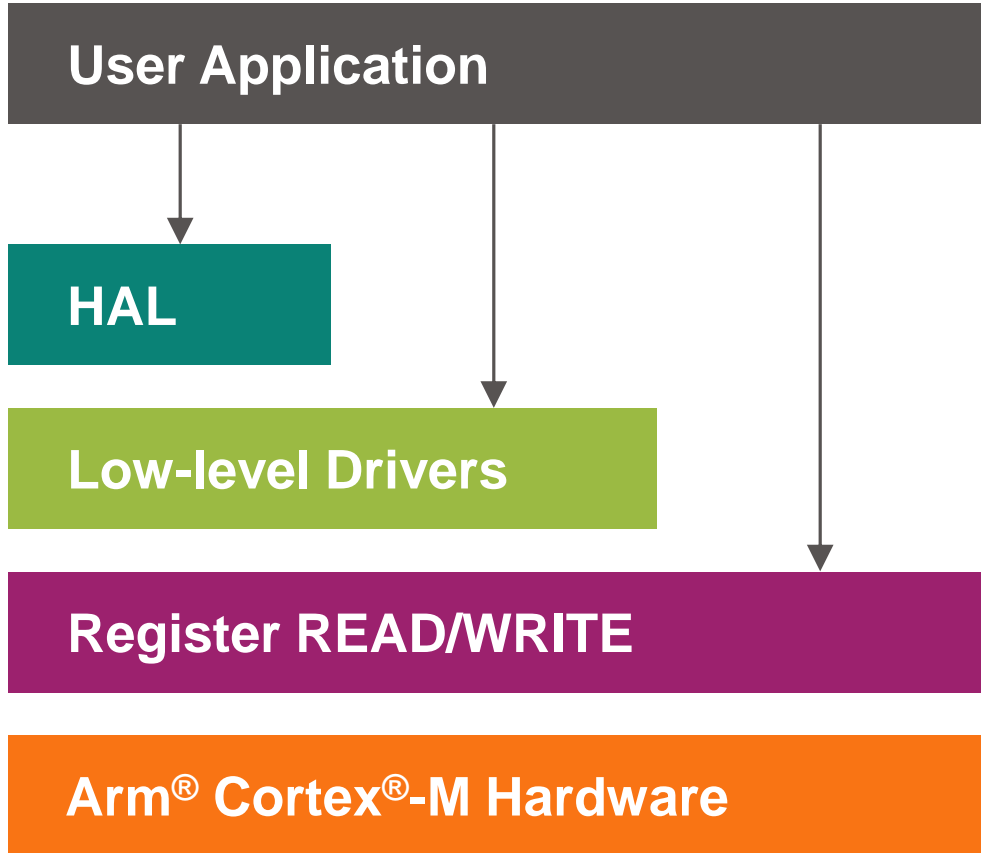
Supported IDEs

- Eclipse IDE w/ Arm® GCC
(included with ModusToolbox™ installation)
- Microsoft Visual Studio Code
- IAR Embedded Workbench
- Arm® Microcontroller Developers Kit – μVision

Command-line Interface

- Make based build system with full CLI
- Scriptable build environment
- Integrable into Continuous Integration and Source Code Management systems

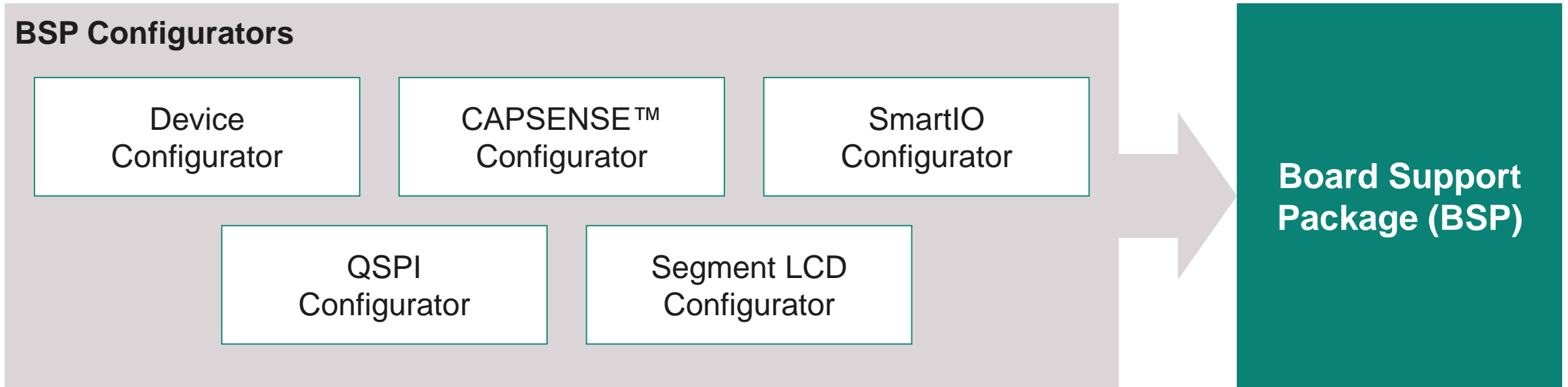
ModusToolbox™ Software – Functional API Levels



ModusToolbox™ includes both low-level drivers and a hardware abstraction layer (HAL) that can coexist with the user application

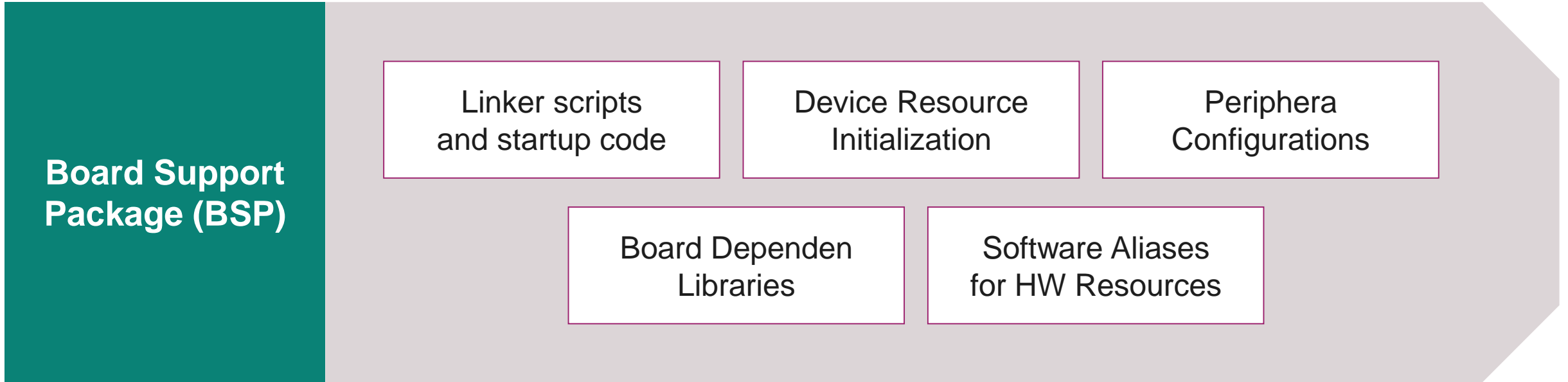
- The **HAL** provides simplified APIs to enable easier development and maximum portability
- The **Low-level Drivers** provide efficient APIs that allow finer control of the respective device peripheral
- ModusToolbox™ **Configurators** generate initialization structures for use with the low-level drivers

ModusToolbox™ Software – Application portability



- **BSP Configurators** provide graphical desktop application that work across different IDEs and development operation systems
- These configurator generate initialization code that support the specific hardware and application specifications

ModusToolbox™ Software – Application portability



- Board Support Packages provide a standard interface to a board's features and capabilities
- Utilities like **BSP Assistant** and **Library Manager** support the development and retargeting of a BSP within a project

Getting Started with PSoC™ 6 MCUs

Getting Started with PSoC™ 6 MCUs



Web Pages, Datasheets

- [PSoC™ 6 MCU Portfolio Webpage](#)
- [PSoC™ 6 MCU Product Family Datasheets](#)
- [PSoC™ Digital Documentation Portal](#)

Development Kits

- [Low-cost prototyping kit for superset PSoC™ 6 MCU](#)
- [Hardware expansion capable kit for superset PSoC™ 6 MCU](#)
- [List of product family specific development kits](#)

Software and Code Examples

- [ModusToolbox™ Software](#)
- [PSoC™ 6 MCU Code Examples](#)

Key Collaterals

- [Getting Started with PSoC™ 6 on ModusToolbox™ software](#)
- [PSoC™ 6 MCU Hardware Design Guidelines](#)
- [PSoC™ 6 MCU Low Power Design Techniques](#)
- [List of PSoC™ 6 application notes](#)
- [List of PSoC™ 6 Technical Reference Manuals \(TRM\)](#)

Developer Community

- [Infineon Developer Community – PSoC™ 6 Forum](#)

ModusToolbox™ Software Training Modules, Technical videos

ModusToolbox™



Software Training

Level 1 Software Training

[Getting Started](#)

Level 2 Software Training

[PSoC™ MCUs](#) / [XMC7000 MCUs](#) / [AIROC™ Bluetooth® SDK](#)

Level 3 Software Training

[Bluetooth® Type 1 & 2](#) / [Wi-Fi](#) / [Machine Learning](#)

ModusToolbox™



Technical Videos

Overview

[Introduction](#) / [Infographic Video](#)

Getting Started









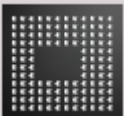
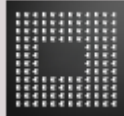

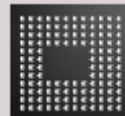
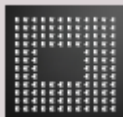



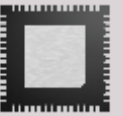







[Installation](#) / [Documentation](#) / [Creating an application](#) / [Exploring an application](#) / [Command-Line Interface](#)

How-To

[Start with a new application](#) / [Blinky LED](#) / [PWM](#) / [GPIO Interrupt](#)

Appendix

PSoC™ 6 MCU package portfolio

	PSoC™ 61 Line Ultra-Low-Power and High-Performance MCU Series	PSoC™ 62 Line Ultra-Low-Power, Dual-Core and High-Performance MCU Series	PSoC™ 63 Line High-Integration Wired/Wireless Connectivity MCU Series	PSoC™ 64 Line Ultra-Low-Power, High-Performance, and Secure MCU Series
TQFP	    64-TQFP 10 x 10-mm ² 80-TQFP ¹ 12 x 12-mm ² 100-TQFP 14 x 14-mm ² 128-TQFP 14 x 20-mm ²	    64-TQFP 10 x 10-mm ² 80-TQFP ¹ 12 x 12-mm ² 100-TQFP 14 x 14-mm ² 128-TQFP 14 x 20-mm ²		
BGA	 124-BGA 9 x 9-mm ²	 124-BGA 9 x 9-mm ²	  116-BGA 5.2 x 6.4-mm ² 124-BGA 9 x 9-mm ²	 124-BGA 9 x 9-mm ²
QFN	 68-QFN 8 x 8-mm ²	 68-QFN 8 x 8-mm ²	 68-QFN 8 x 8-mm ²	 68-QFN 8 x 8-mm ²
CSP	   49-WLCSP 3.0 x 3.0-mm ² 80-WLCSP 3.7 x 3.2-mm ² 100-WLCSP 3.9 x 4.1-mm ²	   49-WLCSP 3.0 x 3.0-mm ² 80-WLCSP 3.7 x 3.2-mm ² 100-WLCSP 3.9 x 4.1-mm ²	 104-M-CSP 5.2 x 6.4-mm ²	

PSoC™ 6 MPN decoder

CY XX 6 A B C DD E – FF G H I JJ K L



Field	Description	Values	Meaning
CY	Cypress	CY	Cypress
XX	Firmware	8C	Standard
		B0	Secured MCU
		S0	Secured MCU + TF-M
6	Architecture	6	PSoC™ 6
A	Line	0	Value
		1	Programmable
		2	Performance
		3	Connectivity
		4	Security
B	Speed	2	100 MHz
		3	150 MHz
		4	150/50 MHz

Field	Description	Values	Meaning		
C	Memory size (Flash/SRAM)	0-3	RFU		
		4	256 K/128 K		
		5	512 K/256 K		
		6	512 K/128 K		
		7	1024 K/288 K		
		8	1024 K/512 K		
		9	RFU		
		A	2048 K/1024 K		
		DD	Package	AZ, AX	TQFP
				LQ	QFN
BZ	BGA				
FM	M-CSP				
FN,FD,FT	WLCSP				
E	Temperature range	C	Consumer		
		I	Industrial		
		Q	Extended Industrial		
FF	Feature code		Standard MCU		
		S2-S6	Standard MCU		
		BL	Integrated Bluetooth LE		

Field	Description	Values	Meaning
G	CPU core	F	Single core
		D	Dual core
H	Attribute code	0-9	Feature set
I	GPIO count	1	31-50
		2	51-70
		3	71-90
		4	91-110
JJ	Engineering sample (optional)	ES	Engineering samples or not
K	Die revision (optional)		Base
		A1-A9	Die revision
L	Tape/Reel shipment (optional)	T	Tape and Reel shipment

E.g.

CY8C6247BZI-D54

CYB06447BZI-D44

CY8C6247BZI-D54ES3T







PSoC™ 4000T

Long Form

Infineon Technologies
September 2023



Infineon's MCU Portfolio



	<p>PSoC™ Multitouch</p> <p>MCU integrated Touch Controller SoC Touchscreen, Slider, Touchpad Wet-finger tracking</p>	<p>Auto PSoC™</p> <p>Cortex M0+ ASIL-B Up to 384kB Flash CapSense / Magsense</p>	<p>MOTIX™</p> <p>Cortex M0/M3 ASIL-B Up to 256kB Flash Motor Control SoC</p>		
	<p>PSoC™ Fingerprint</p> <p>MCU integrated Touch Controller SoC Capacitive fingerprint solution Support multi surface usage solution</p>	<p>Auto PSoC™ HV</p> <p>Cortex M0+ ASIL-C Up to 384kB Flash Up to 42V tolerant MCU</p>			<p>TRAVEO™ T2G</p> <p>Dual Cortex M4 / M7 ASIL-B Up to 16MB Flash HSM, GPU (Cluster)</p>
		<p>XMC1000</p> <ul style="list-style-type: none"> • CPU up to 48MHz and 200KB Flash • CORDIC Math co-processor • CCU8 timer 	<p>FM3</p> <ul style="list-style-type: none"> • CPU up to 144MHz and 1MB Flash • Basic Motor Control 	<p>XMC4000</p> <ul style="list-style-type: none"> • CPU up to 144 MHz and 2MB Flash • Motor and power control 	<p>AURIX™ TC4x</p> <p>Up to 6x Tricore ASIL-D Up to 24MB Flash PPU,CSRM,Lockstep,PCIe,RE</p>
				<p>FM4</p> <ul style="list-style-type: none"> • CPU up to 200MHz and 2MB Flash • High Performance Motor Control 	<p>AURIX™ TC3x</p> <p>Up to 6x Tricore ASIL-D Up to 16MB Flash HSM,GETH,Lockstep,CAN FD</p>
	<p>PSoC™ 3</p> <ul style="list-style-type: none"> • CPU up to 67 MHz and 64 KB Flash • High performance analog • Programmable logic integration 	<p>PSoC™ 4</p> <ul style="list-style-type: none"> • CPU up to 48MHz and 384KB Flash • Industry leading CAPSENSE™ and mixed signal functionality 	<p>PSoC™ 5</p> <ul style="list-style-type: none"> • CPU up to 80MHz and 256KB Flash • High-precision analog • Programmable logic integration 	<p>PSoC™ 6</p> <ul style="list-style-type: none"> • Dual Cortex@-M4 and M0+, up to 150 MHz and 2MB Flash • Ultra-low-power with hardware based security 	<p>AURIX™ TC2x</p> <p>Up to 3x Tricore ASIL-D Up to 8MB Flash HSM,ETH,Lockstep,CAN FD</p>
	<p>PSoC™ 1</p> <ul style="list-style-type: none"> • CPU up to 24Mhz and 32KB Flash • CAPSENSE™ and application specific mixed signal functionality 	<p>FM0+</p> <ul style="list-style-type: none"> • CPU up to 40MHz and 128KB Flash • Entry level USB 			
	<p>8-bit/SoC</p>	<p>32-bit Arm® Cortex®-M0/M0+</p>	<p>32-bit Arm® Cortex®-M3</p>	<p>32-bit Arm® Cortex®-M4</p>	<p>32-bit Arm® Cortex®-M7</p>
					<p>32-bit TriCore™</p>

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>CY8C4129-S 24-MHz M0+, 384K/32K¹ CMP², Opamp, ADC³ SCB⁴, MSC¹², Smart I/O⁶</p> <p>CY8C4128-S 24-MHz M0+, 256K/32K¹ CMP², Opamp, ADC³ SCB⁴, IDAC⁵, Smart I/O⁶</p> <p>CY8C4147-S 48-MHz M0+, 128K/16K CMP, Opamp, ADC SCB, IDAC, Smart I/O</p> <p>CY8C4127-S 24-MHz M0+, 128K/16K CMP, Opamp, ADC SCB, IDAC, Smart I/O</p> <p>CY8C4127-M 24-MHz M0, 128K/16K CMP, Opamp, ADC, SCB IDAC</p> <p>CY8C4126-M 24-MHz M0, 64K/8K CMP, Opamp, ADC, SCB IDAC</p> <p>CY8C4125 24-MHz M0, 32K/4K CMP, Opamp, ADC, SCB IDAC</p> <p>CY8C4124 24-MHz M0, 16K/4K CMP, Opamp, ADC, SCB IDAC</p>	<p>CY8C4149-S 48-MHz M0+, 384K/32K CMP, Opamp, ADC SCB, MSC, Smart I/O</p> <p>CY8C4148-S 48-MHz M0+, 256K/32K CMP, Opamp, ADC SCB, IDAC, Smart I/O</p> <p>CY8C4128-BL 24-MHz M0, 256K/32K CMP, Opamp, ADC, SCB IDAC, BLE⁷</p> <p>CY8C4127-BL 24-MHz M0, 128K/16K CMP, Opamp, ADC, SCB IDAC, BLE</p> <p>CY8C4146-S 48-MHz M0+, 64K/8K CMP, Opamp, ADC, SCB IDAC, Smart I/O</p> <p>CY8C41xx-PS 48-MHz M0+, 32K/4K CMP, Opamp, ADC SCB, VDAC, Smart I/O</p> <p>CY8C4125-S 24-MHz M0+, 32K/4K CMP, Opamp, ADC, SCB IDAC, Smart I/O</p> <p>CY8C4124-S 24-MHz M0+, 16K/4K CMP, Opamp, ADC, SCB IDAC, Smart I/O</p>	<p>CY8C4247-M 48-MHz M0, 128K/16K, CMP, Opamp, ADC, SCB IDAC, UDB⁸, CAN⁹</p> <p>CY8C4246-M 48-MHz M0, 64K/8K, CMP, Opamp, ADC, SCB IDAC, UDB</p> <p>CY8C4246-DS 48-MHz M0, 64K/8K CMP, SCB UDB, Smart I/O</p> <p>CY8C4245-DS 48-MHz M0, 32K/4K CMP, SCB UDB, Smart I/O</p> <p>CY8C4245 48-MHz M0, 32K/4K CMP, Opamp, ADC, SCB IDAC, UDB</p> <p>CY8C4244 48-MHz M0, 16K/4K, CMP, Opamp, ADC, SCB IDAC, UDB</p>	<p>CY8C4248-BL 48-MHz M0, 256K/32K CMP, Opamp, ADC, SCB IDAC, BLE, UDB</p> <p>CY8C4247-BL 48-MHz M0, 128K/16K CMP, Opamp, ADC, SCB IDAC, BLE, UDB</p> <p>CY8C4248-L 48-MHz M0, 256K/32K CMP, Opamp, ADC, SCB IDAC, UDB, CAN, USB</p> <p>CY8C4247-L 48-MHz M0, 128K/16K CMP, Opamp, ADC, SCB IDAC, UDB, CAN, USB</p> <p>CY8C4246-L 48-MHz M0, 64K/8K CMP, Opamp, ADC, SCB IDAC, UDB, CAN, USB</p>	<p>CY8C4Axx 48-MHz M0+, 32K/4K CMP, Opamp, UAB¹⁰ ADC, SCB, VDAC Smart I/O</p>	<p>CY8C45xx-S Motor Control 48-MHz M0+, 256K/32K MCA¹¹, CMP, Opamp 2X ADC, SCB, IDAC Smart I/O, ECO</p> <p>CY8C47xx-S Inductive Sensing 48-MHz M0+, 32K/4K CMP, Opamp, UAB¹⁰ ADC, SCB, VDAC Smart I/O</p>
<p>CY8C4045-T 48-MHz M0+, 64K/8K SCB, TCPWM, CAPSENSE</p> <p>CY8C4045-S 48-MHz M0+, 32K/4K CMP, ADC, SCB IDAC, Smart I/O</p> <p>CY8C4024-S 24-MHz M0+, 16K/2K CMP, ADC, SCB IDAC, Smart I/O</p> <p>CY8C4014 16-MHz M0, 16K/2K CMP, I²C, IDAC</p>						

¹ Flash KB/SRAM KB

² Comparator

³ Analog-to-digital converter

⁴ Serial communication block

⁵ Current-output DAC

⁶ Embedded programmable digital logic in the I/O subsystem

⁷ Bluetooth Low Energy

⁸ Universal digital block

⁹ Controller area network

¹⁰ Universal analog block

¹¹ Motor Control Accelerator

¹² Multi-sense converter

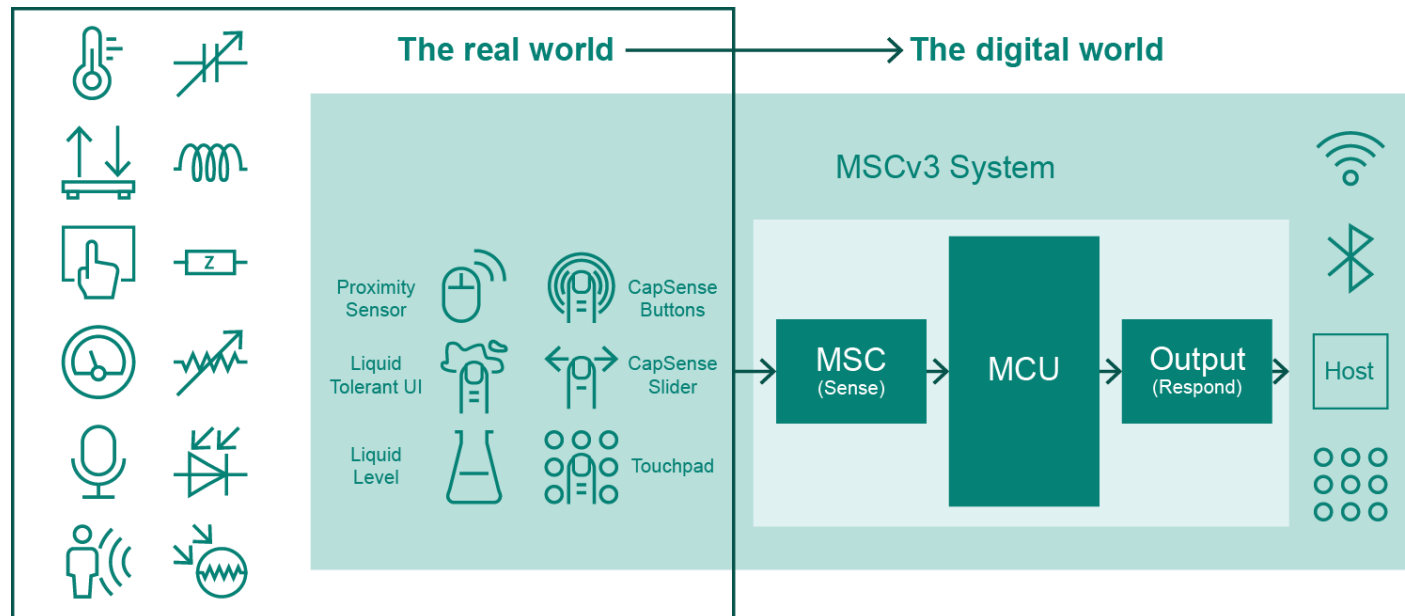
Status
Availability



5th Generation Sensing Technology – Multi Sense Converter

Taking World Class Technology 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)
- 10x higher signal-to-noise ratio performance
 - <100aF rms noise floor for Cs=8pF
 - Supports Cs up to 200pF
- 10x lower power, Autonomous operation without CPU
 - Sensing block operation with DMA
 - Offload CPU bandwidth
- Other key enhancements
 - Flat spot reduction
 - Temperature stability
 - Multi-chip, Multi-channel & External sync



PSoC™ 4000T: Add one day of battery life to your product

Capacitive-Sensing Touch Solutions

Touchscreens,
Proximity Sensing,
Button Replacement,
Sliders

Ratio-Metric and Differential Sensing Architecture elevates noise immunity to new next level...

Insensitive to low frequency external noise sources
Easy to design, avoids noise filters (hardware & software)
Superior against single-ended competitive solution



Industry's first Always-on sensing touch controller delivering **10x performance at 10x lower power** to support HMI needs of modern battery powered products

Longer battery life at **10x lower power**, fully autonomous sensing subsystem. Automatic power cycling optimizes system power. Significant power savings because **ONLY** touch subsystem is active for sensing operation

Liquid Tolerant
Glove Support
Works through thick overlay
Small sensor size

Improved user experience with 10x performance

- 10x higher signal-to-noise performance with touch sub-system noise floor < 100aF
- All-NEW ratio-metric sensing architecture
- Improved temperature stability & external sync

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 upto 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

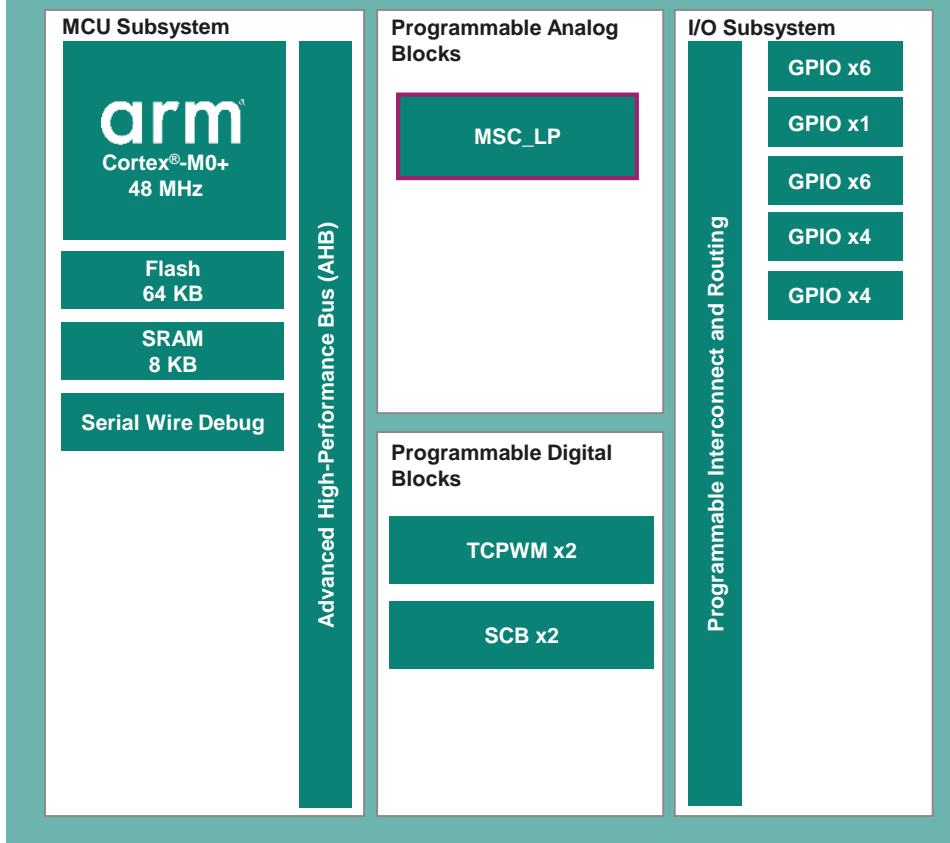
Packages

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

Collateral

[Datasheet](#)

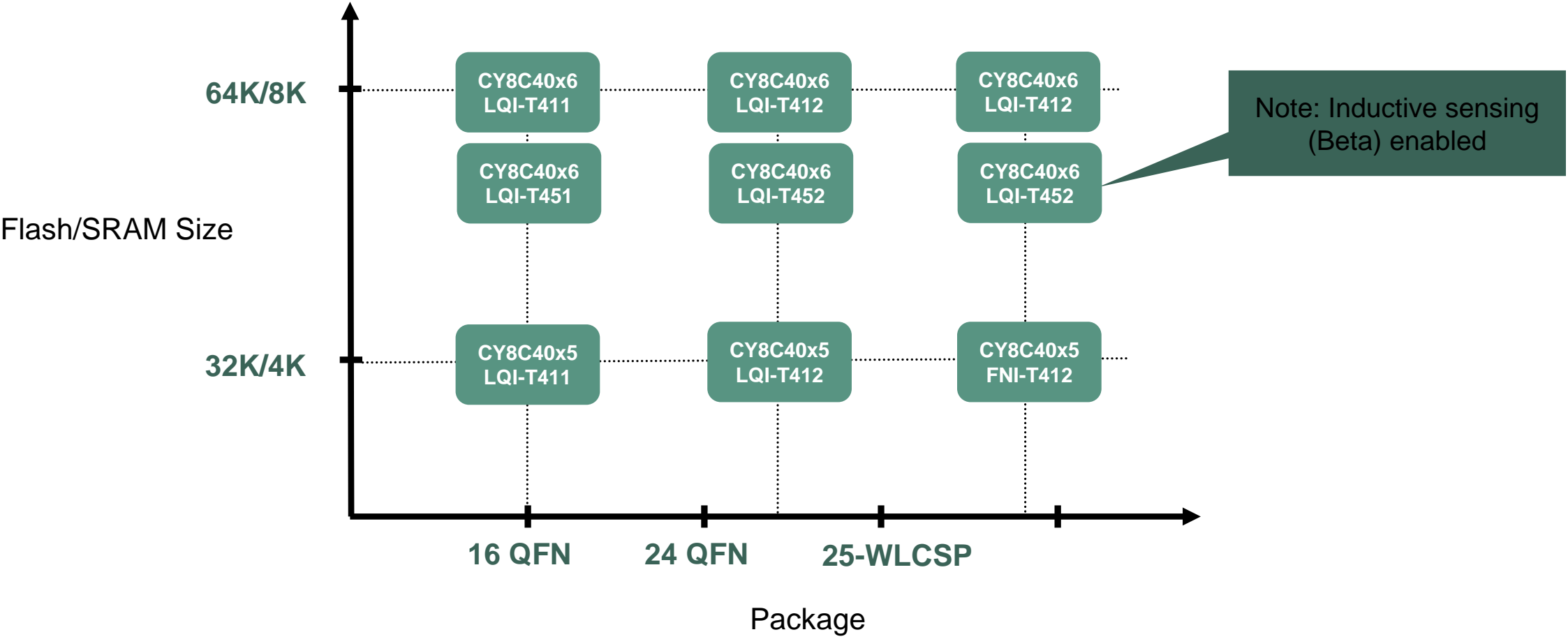
PSoC™ 4000T



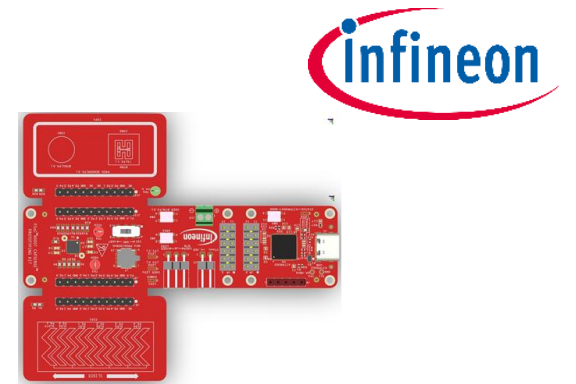
Availability

Sampling: NOW
Production: NOW

PSoC™ 4000T portfolio matrix



PSoC™ 4000T Kits Comparison



	PSoC™ 4000T CAPSENSE™ Evaluation Kit	PSoC™ 4000T CAPSENSE™ Prototyping kit
Kit MPN	CY8CKIT-040T	CY8CPROTO-040T
Availability	Now	January 2024
KitProg3	Yes	Yes
Autonomous operation without CPU	Yes	Yes
Ultra-low power Always-ON sensing	Yes	Yes
CAPSENSE™ Buttons	One self-cap CapSense™ touch button	One self-cap button, one mutual-cap button
CAPSENSE™ Slider	No	5 segment linear slider, self and mutual sensing capable
CAPSENSE™ Touchpad	4 x 4 Touchpad, self and mutual sensing capable	No
CAPSENSE™ Proximity Sensor	Yes, Proximity sensor on PCB around the trackpad	Yes, Proximity sensor on PCB
Liquid Tolerance	Yes, Immersible in liquid, full liquid tolerance	No
Liquid Level sensing	No	No
Expansion connectors	Yes, limited	Yes, Fully flexible proto-typing kit
Best suited for	Liquid tolerant, low power, touch, proximity & trackpad interface on this kit, suited for live demos , and showcase 5 th Generation CapSense™ capabilities	Traditional proto-typing kit that is easy to use, connect external sensors on your own hardware and enables quick proof of concept development and evaluation of 5 th Gen CapSense™

PSoC™ 4 Packages

Package		SOIC		SSOP	QFN						TQFP						WLCSP	uBGA	
Pins		8	16	28	16	24	32	40	48	56	68	32	44	48	64	64	100	16-110	124
Size (mm)		3.9x4.9 x1.6	3.9x9.9 x1.6	5x10 x1.65	3x3 x0.6	4x4 x0.6	5x5 x0.6	6x6 x0.6	6x6 x0.6	7x7 x0.6	8x8 x1.0	7x7 x1.4	10x10 x1.4	7x7 x1.4	10x10 x1.4	14x14 X1.4	14x14 x1.4		9x9 x1.0
Pin Pitch (mm)		1.27	1.27	0.65	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.8	0.8	0.5	0.5	0.8	0.5		0.65
PSoC™ 4000 Family	PSoC 4000	✓	✓	✓	✓	✓												16	
	PSoC 4000S					✓	✓	✓				✓		✓				25	
	PSoC 4000T				✓	✓												25	
PSoC™ 4100 Family	PSoC 4100			✓				✓					✓	✓				35	
	PSoC 4100S						✓	✓					✓	✓				35	
	PSoC 4100PS			✓					✓					✓				45	
	PSoC 4100S Plus												✓	✓	✓	✓			
	PSoC 4100S Plus 256KB													✓	✓	✓			
	PSoC 4100S Max													✓	✓		✓		
	PSoC 4100M										✓		✓	✓	✓	✓			
PSoC 4100BL									✓									68/76	
PSoC™ 4200 Family	PSoC 4200DS			✓														25	
	PSoC 4200			✓				✓					✓	✓				35	
	PSoC 4200M									✓			✓	✓	✓	✓			
	PSoC 4200L									✓			✓	✓				110	✓
	PSoC 4200BL									✓								68/76	
PSoC™ 4500	PSoC 4500												✓	✓	✓				
PSoC™ 4700	PSoC 4700S					✓							✓				25		
PSoC™ 4A00 Family				✓					✓					✓				45	

PSoC™ 4 Partnumber Nomenclature

CY8C 4 A B C DE F - S XYZ

Field	Description	Values	Meaning
CY8C	Cypress Prefix		
4	Architecture	4	PSoC™ 4
A	Family	0	PSoC™ 4000 Family
		1	PSoC™ 4100 Family
		2	PSoC™ 4200 Family
B	CPU Speed	2	24 MHz
		4	48 MHz
C	Flash Capacity	3	8 KB
		4	16 KB
		5	32 KB
		6	64 KB
		7	128 KB
		8	256 KB
		9	384 KB
DE	Package Code	AX/AZ	TQFP (0.8mm pitch) / (0.5mm pitch)
		LQ/LT	QFN
		SX	SOIC
		PV	SSOP
		FN	WLCSP
		BZ	uBGA
F	Temperature Range	I	Industrial
		Q	Extended Industrial
S	Series Designator		
XYZ	Attributes Code	000-999	Code of feature set in specific family

Ordering information – PSoC™ 4000T

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

Infineon: Your Trusted Partner in Touch HMI Solutions



#1

Touch HMI Solution

2+ Billion

Devices
Shipped

6+ Billion

Conventional
Buttons replaced

20 Years

Longest Running
Touch Supplier

Patents

100+ Touch
Patents



~1,600
Engineers in IoT
Business Line



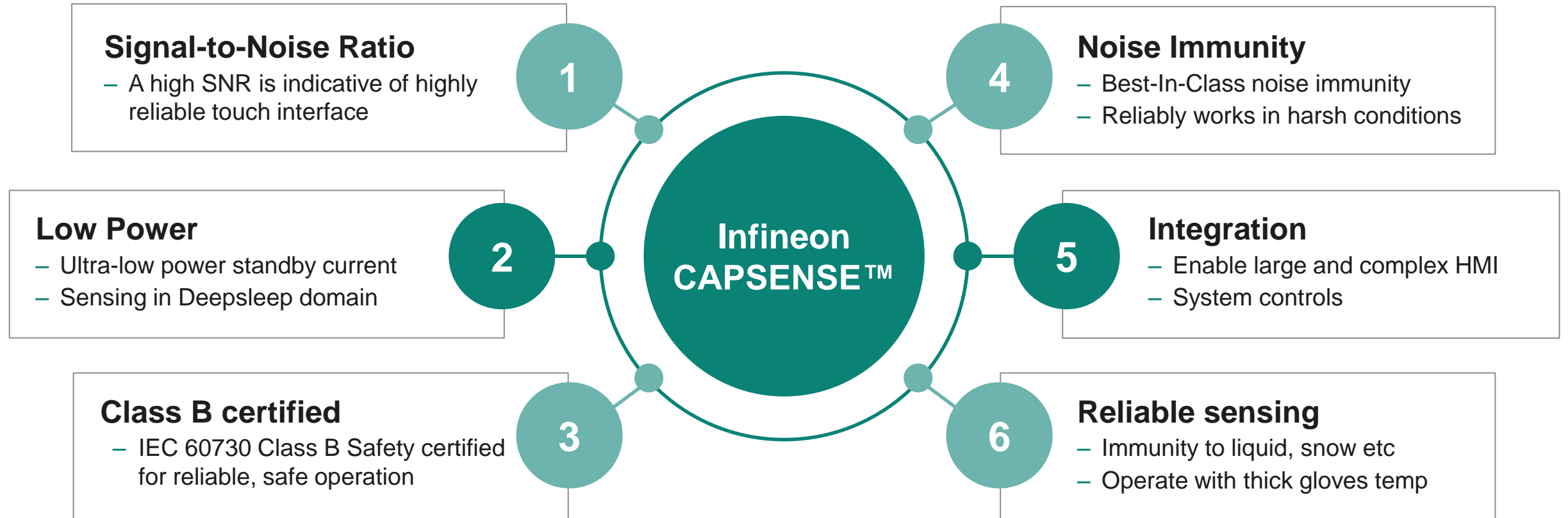
~€300M
R&D Spend in
IoT



52
Locations
globally

20-Years of Innovation & Leadership in Touch HMI Solutions

The Infineon Solution: CAPSENSE™ Touch-Sensing Technology



Outperforming Competition With Ultra-Low Power CAPSENSE™

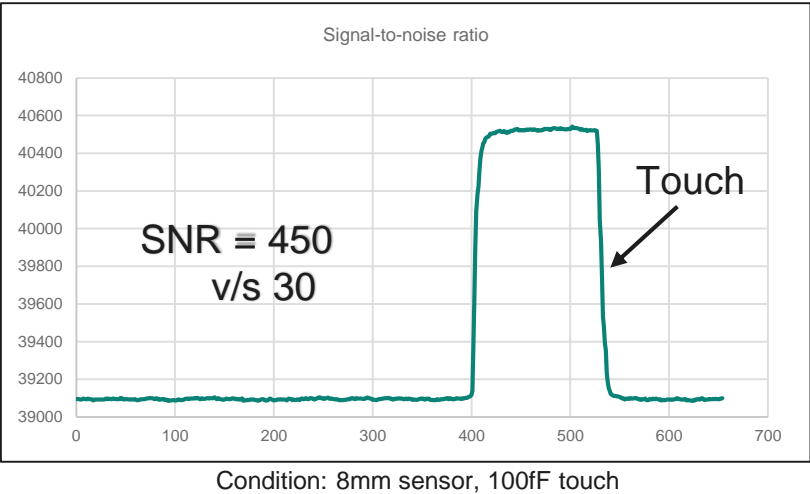
Industry's first Always-on sensing touch controller delivering 10x performance at 10x lower power to support HMI needs of modern battery powered products

Longer battery life at 10x lower power

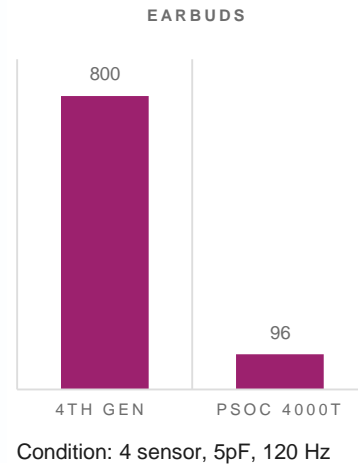
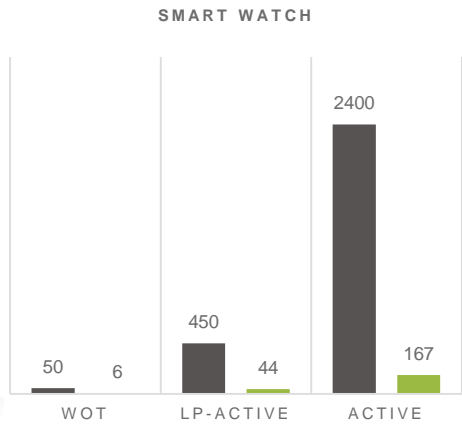
- Fully autonomous sensing subsystem
- Automatic power cycling optimizes system power
- Significant power savings because ONLY touch subsystem is active for sensing operation

Improved user experience with 10x performance

- 10x higher signal-to-noise performance with touch sub-system noise floor < 100aF
- All-NEW ratio-metric sensing architecture
- Improved temperature stability & external sync



**125x
Better**
[SNR /uA]



Advanced Proximity Sensing and Gesture

Touchless Gesture Control User Experience

PSoC™ 4 MCU delivers reliable proximity sensing with directivity and Gesture recognition using CAPSENSE™ technology, enabling an intuitive HMI solution at low (system-level) cost while maintaining product aesthetics.

Directivity

Sense & Track 360°

Sensing range up to 15 cm

Customizable Gestures

No false activation

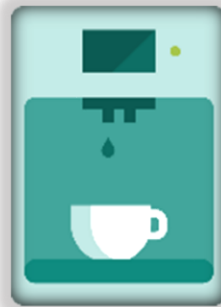
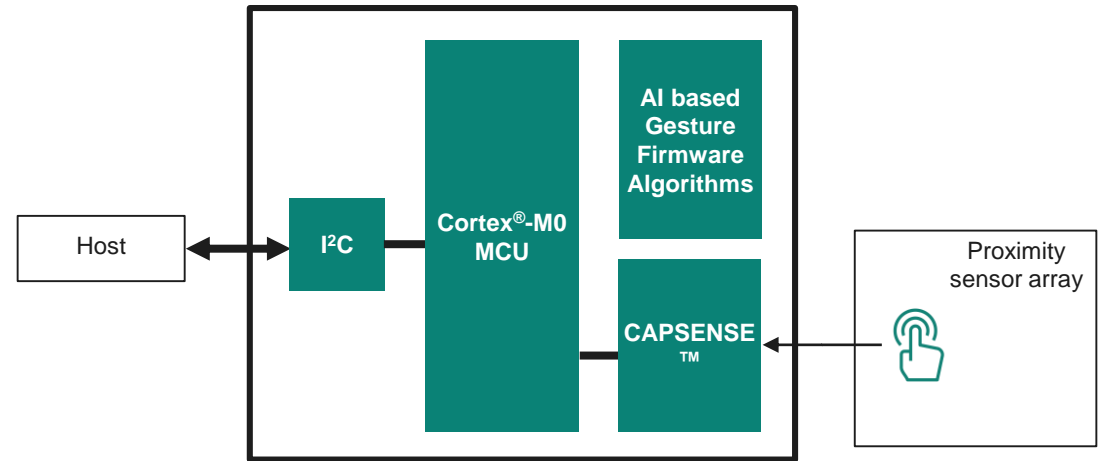
Reliable



PSoC™ Value

- **Proximity based gesture control provides**
 - Intuitive and responsive control options with Integrated 2-D and 3-D gestures
 - Long detection range with direction & distance awareness
 - ML powered processing algorithms for directivity sensing
 - Highly reliable: Prevents false detection, unwanted objects, external noise
- **Example use case**
 - Activate voice assistant on Smart Speaker upon touchless Gesture to address privacy concerns

PSoC™ 4 One-Chip Solution

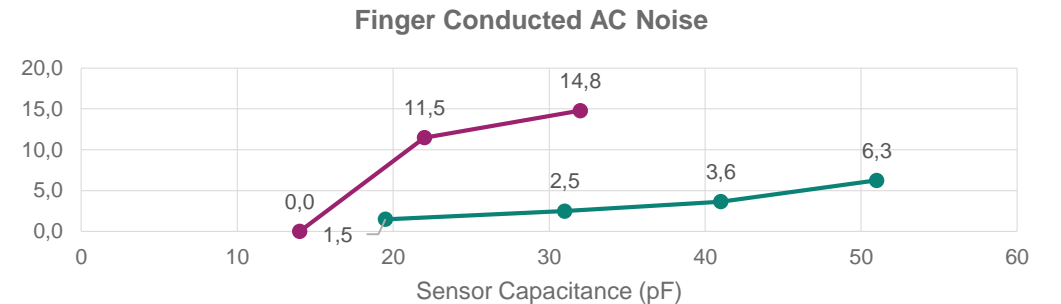
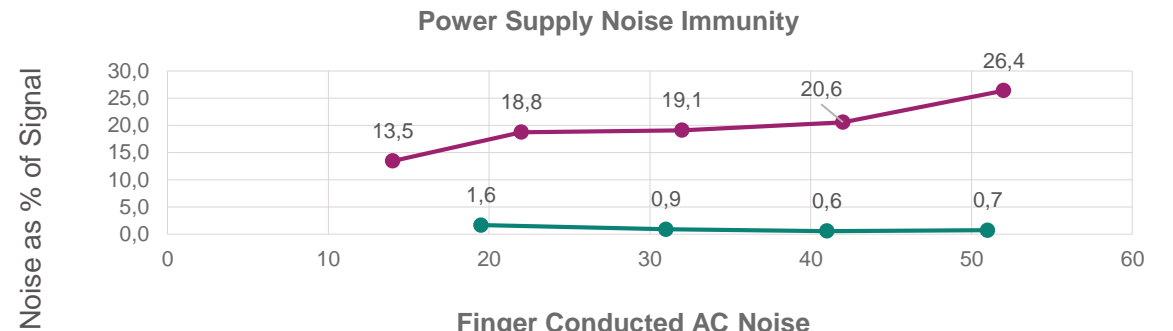
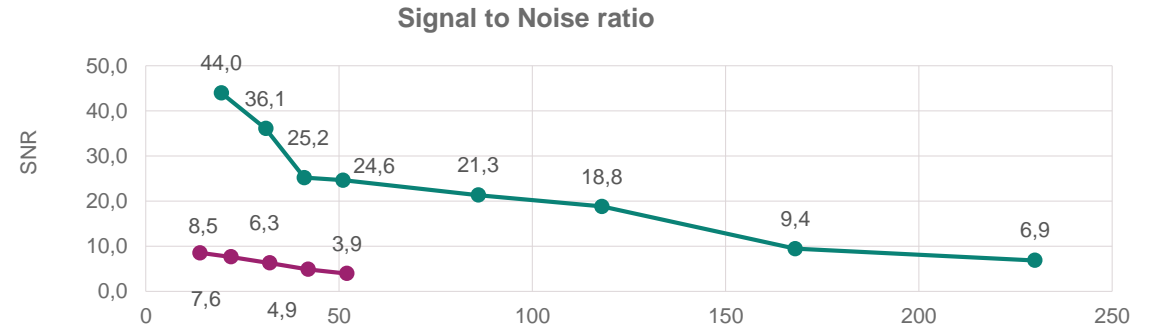


Reliable Touch Sensing



Ratio-Metric and Differential Sensing Architecture elevates noise immunity to new next level...

- Insensitive to low frequency external noise sources
- Improved common mode noise rejection for wall powered products
- Wider measurement window & lower noise floor
- Easy to design, avoids noise filters (hardware & software)
- Superior against single-ended competitive solution



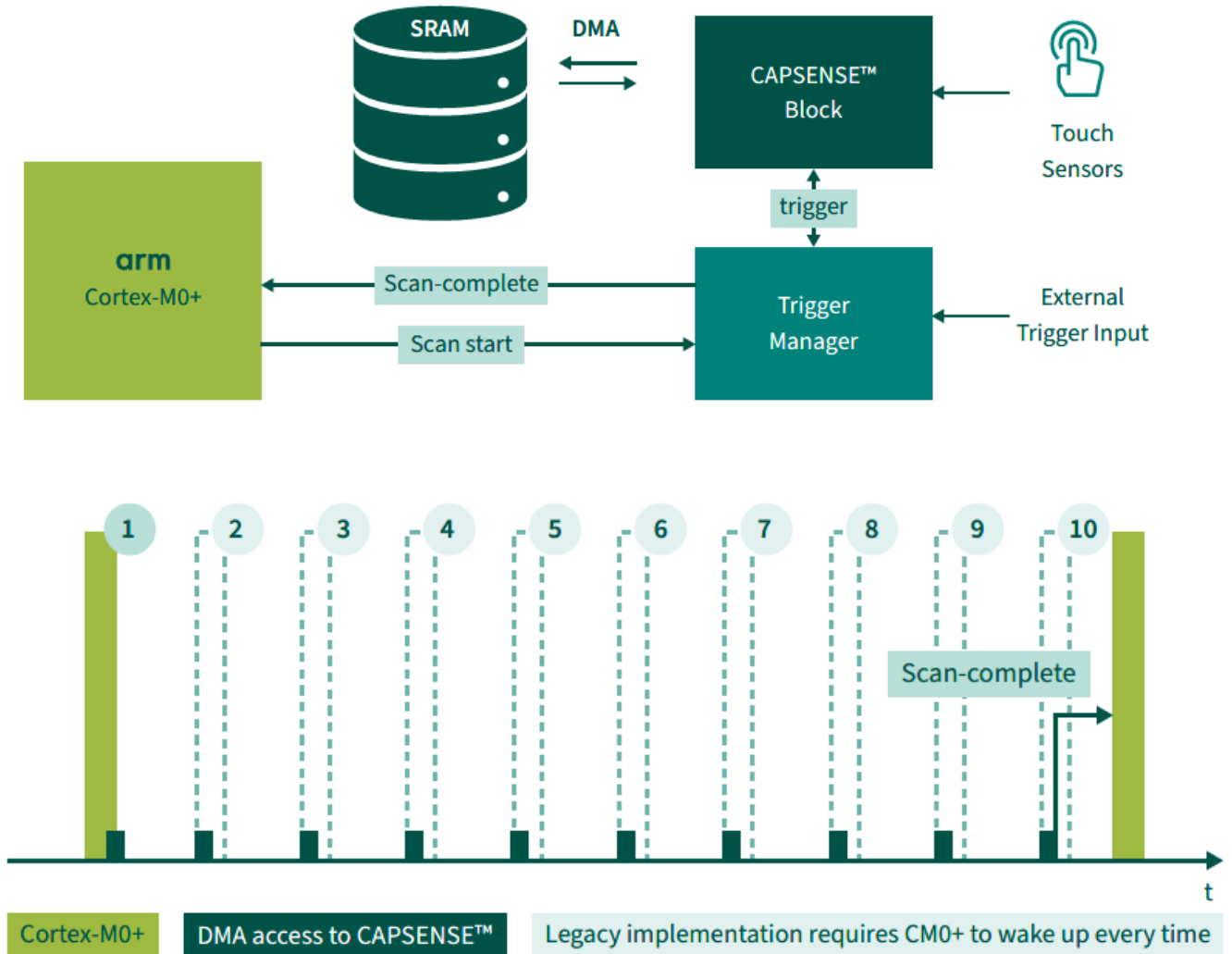
● 5th Gen ● 4th Gen

Autonomous Sensing – Freer CPU bandwidth from PSoC™ 4

- Autonomous Scan**
- CPU legacy mode
 - DMA mode, CPU **no longer** required to load sensor configurations between scans
 - Supports up to 32 sensors

- Advantages**
- Higher Refresh Rate
 - Shorter scan time
 - Shorter Frame Scan
 - Offloads the CPU, significant CPU bandwidth saving

Autonomous sensing block diagram in PSoC 4100S Max with CAPSENSE™



CAPSENSE™ Works Under Liquids

CAPSENSE™ maintains touch accuracy in wet conditions by using shield electrodes and guard sensors

- Shield electrodes are copper fills around sensors that eliminate false touches from liquid droplets and mist
- Guard sensors are copper traces that detect and eliminate false touches caused by streaming liquids or submersion

Watch our [CAPSENSE™ Liquid Tolerance demo video](#) to learn more

Raw count without a shield electrode

The Raw Count generated by a water droplet exceeds the touch threshold, causing a false touch

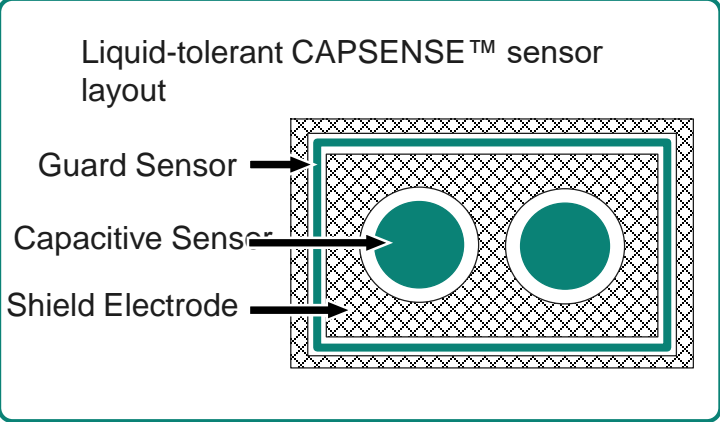


Raw count with a shield electrode

The Raw Count generated by a water droplet is below the touch threshold; therefore, there is no false touch

CAPSENSE™ works under liquids

CAPSENSE™ buttons even work under spaghetti sauce



Competition is lagging behind Infineon's on innovation

Parameter	4 th Gen	5 th Gen (PSoC 4000T)	Conditions
Sensing Methods	Self, Mutual, Inductive		All 3 sensing methods in one device
Supply voltage	1.71 to 5.5 V		
Signal to Noise ratio	30:1	450:1	4 sensors, 5pF, 128 Hz
Proximity Sensing Range	30 cm	45+ cm	20 cm sensor loop/diameter
Average current – WoT	50 uA	6 uA	1 sensor, 10 Hz
Average current – Active1	2000 uA	200 uA	13 sensors, 5pF, 128 Hz
Average current – Active2	800 uA	90 uA	4 sensors, 5pF, 128 Hz
Noise Immunity – Power supply transient noise	< 26 %	1%	VDD = 5v
Noise Immunity – CMN noise	< 15%	5%	VDD = 5v

Brings first to market solutions for complex problems.....

- **Autonomous sensing** -> Faster response, lower power, free up CPU bandwidth for single chip system control implementation
- **Always-on sensing** -> Enable ultra-low power sensing
- **Multi-channel sensing** -> Easy to use, parallel sensing, enable seamless user experience on larger group of sensors
- **Multi-Chip sensing** -> Daisy-chain more than one PSoC 4 for HMI operation
- **Innovative sensing front-end** -> Differential & Ratio-metric, with dither DACs, spread spectrum clock, chop cycles, 2nd order HW filter
- **Multi-sense** -> Integrate more analog sensors in cost effective way

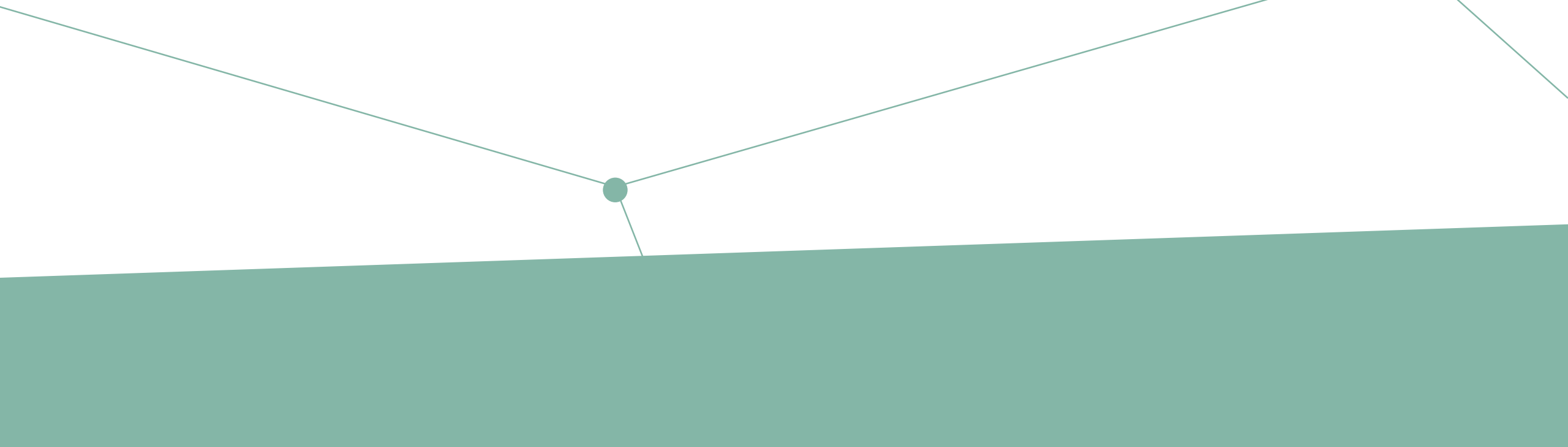
CAPSENSE™ Technology Comparison

Device / Feature	CY8CMBR3108	CY8C4014FNI (4000)	CY8C4014LQI	CY8C4024LQI (4000S)	CY8C4025LQI (4000T)
Channels	8	2	16	16	16
Slider Capability	N	Y	Y	Y	Y
Core	NA	ARM Cortex M0	ARM Cortex M0	ARM Cortex-M0+	ARM Cortex-M0+
Proximity Sensing Range	30 cm				45+cm
SNR	5			6.5	48
SNR (A10 / LR10) Customer Eval	-	56	-	-	300 - 450
Sensing method	Self	Self	Self	Self + Mutual	Self + Mutual + Inductive
Noise Immunity – Power supply transient Noise impact	> 26 %			> 26 %	1%
Noise Immunity – CMN Noise Impact	> 15 %			< 15%	5%

5th Gen CAPSENSE™ new features and key benefits

Key features	Key benefits	Condition
<p>Improved SNR – Up to 48:1 SNR vs 6.1:1 on current fourth generation CAPSENSE™ technology</p>	<ul style="list-style-type: none"> – Better noise immunity, thicker cover-lens, small form factor, improved proximity sensing and direction sensing – Greater flexibility in PCB routing, supports larger and miniature sensors, different materials – Low power in standby and active modes, longer battery life – Improved touch response faster than most displays for a smooth experience – Free up CPU to perform faster control loops or other peripheral operations, lower power 	<p>VDD = 5 V No FW filter Cp = 33pF Cr = 0.1pF</p>
<p>Wider Parasitic Capacitance Range – 2pF – 200pF</p>		<p>No FW filter</p>
<p>Autonomous Sensing Sensing without CPU, saving power</p>		<p>10 mm CSD button Acrylic Overlay Cp = 33pF Cr = 0.1pF</p>
<p>Faster Refresh Rates – From 22 Hz to 242 Hz</p>		<p>7x5 CSX touch 3 mm Acrylic Overlay SNR = 10:1 Finger Size = 8 mm</p>
<p>Reduced CPU Utilization – From 40% utilization to 7%</p>		<p>10x8 CSX touch Scan Clock = 1 MHz No of sub-conversions = 70 Refresh rate = 100 Hz</p>

Target PSoC™ 4000T Applications



Target applications

Earbuds

Smart Watch

VR Glasses

AR Glasses

Speakers

Speakers

Gaming

Appliances

PSoC™ 4000T – Wider Application List

PSoC™ 4000T – Advanced Sensing Solutions

<p>Touch Button</p>	<p>Slider</p>	<p>Proximity Detection</p>	<p>Force Detection</p>
<p>Touch Over Metal</p>	<p>Liquid Level Sensing</p>	<p>Frost Detection</p>	<p>Reed S/W Replacement</p>

Technical documentation for CAPSENSE™

Read our CAPSENSE™ Design Guides

Comprehensive and ideal documents for those who want to design touch HMI. It guides from concept through production and helps to overcome various system level challenges in create robust touch HMI for your product.

- › [CAPSENSE™ Capacitive Sensing Overview Web Page](#)
- › [Getting Started with CAPSENSE™ Application Note](#)
- › [CAPSENSE™ Configurator Guide as part of ModusToolbox™](#)
- › [PSoC™ 4 and PSoC™ 6 MCU CAPSENSE™ Design Guide](#)

Start with a Code Example

Start and complex code examples for CAPSENSE™ touch HMI solutions

- › [Code Examples for ModusToolbox™ Software](#) on GitHub

Reach out to us on the [Infineon Developer Community](#) for help!

Getting Started with CapSense

Document Number. 001-64846 Rev. *Y

AN64846 - Getting Started with CapSense®

Last Updated: May 28, 2020

Version: *Y

This guide is an ideal starting point for those new to capacitive touch sensing (CapSense®) as well as for learning key design considerations and layout best practices to ensure design success.

Capacitive touch sensing has changed the face of industrial design in products such as cellphones, PCs, consumer electronics, automotive, and white goods. Cypress CapSense solutions bring elegant, reliable, and easy-to-use capacitive touch sensing functionality to your design. Our capacitive touch sensing solutions have replaced more than four billion mechanical buttons.

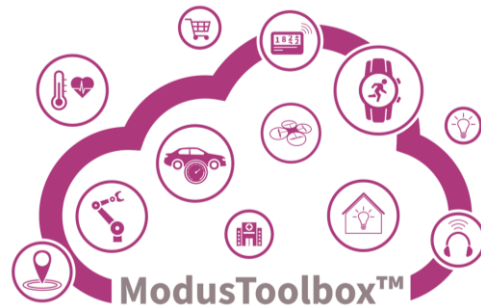
This guide is an ideal starting point for those new to capacitive touch sensing (CapSense®) as well as for learning key design considerations and layout best practices to ensure design success.

In addition, you can use this guide to:

- Become familiar with the technology underlying CapSense solutions
- Understand important design considerations, such as layout, schematic, and EMI (Electro Magnetic Interference)
- Become familiar with the CapSense product portfolio
- Select the right device for your application
- Migrate between CapSense devices
- Become familiar with the many resources available to support your entire design cycle

World-class whole product solution for fast time-to-market

CAPSENSE™ Software (Touch Firmware & Tools)



- › A comprehensive State of the art **Touch firmware library** for reliable touch interface design
- › Why re-invent? **Decades of learning** & optimization: Noise immunity, Low power, SmartSense™ Auto-Tuning
- › Simple **graphical user interface** for easy customization, real-time performance analysis, tuning and debugging

Support



- › A **complete and comprehensive** Technical documentation, Code examples, Webinar, Dev Kits etc.
- › Invested in **R&D** and world-wide sales / field **support teams** and Ecosystem partners
- › Infineon Developer Community for design and product support
- › Customer Design Service, Sensor Design support

More info to get started



Web Pages

– [PSoC™ 4000T product page](#)

Development Kits, Module Partners, and Software

– [CY8CKIT-040T evaluation kit](#)

Sales Enablement Collateral

[PSoC™ 4000T Product Presentation
Datasheet](#)
[More Collateral Documents](#)

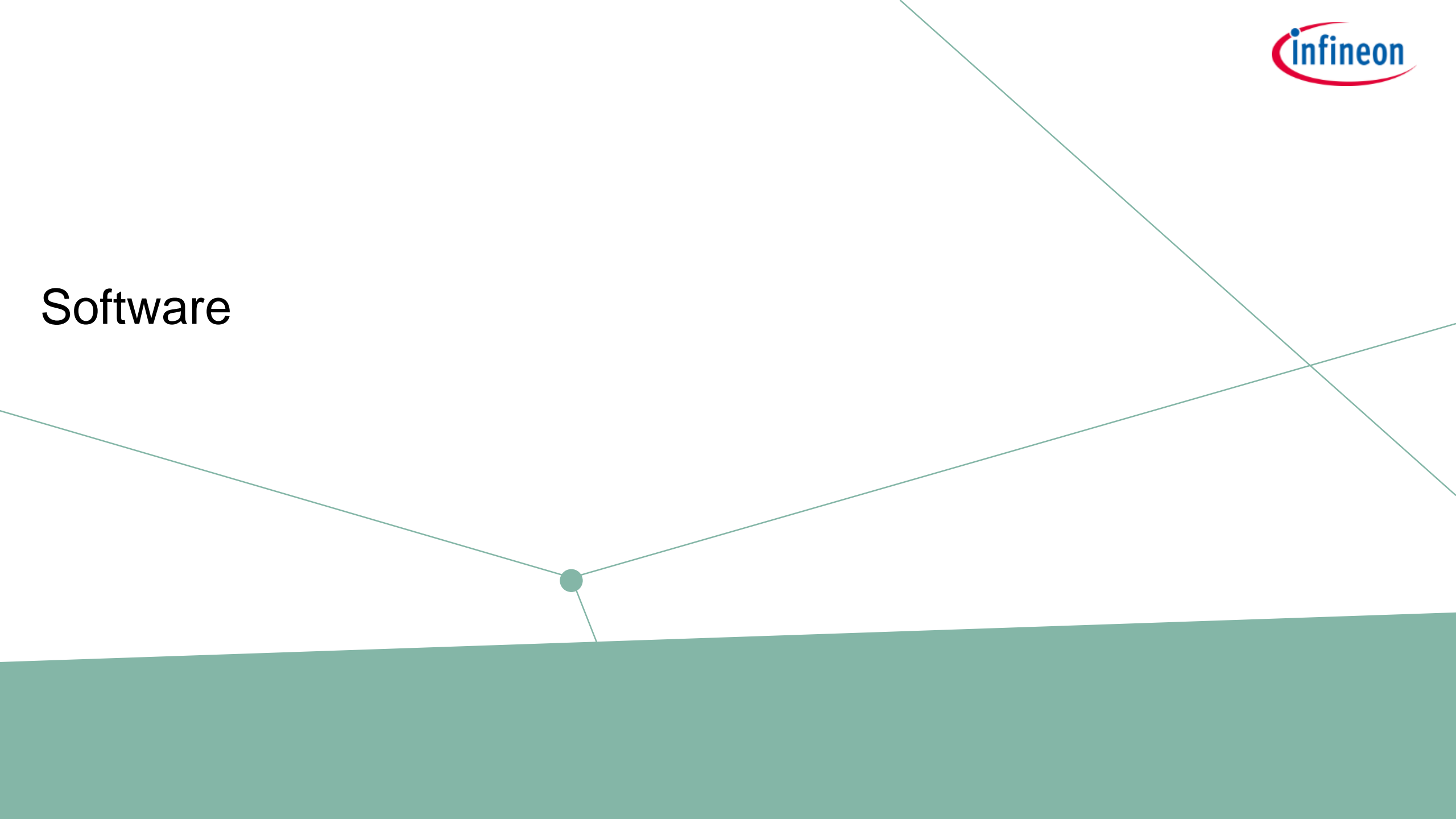
Developer Community (For Technical Support)

[CAPSENSE™ Forum](#)
[PSoC™ 4 Forum](#)

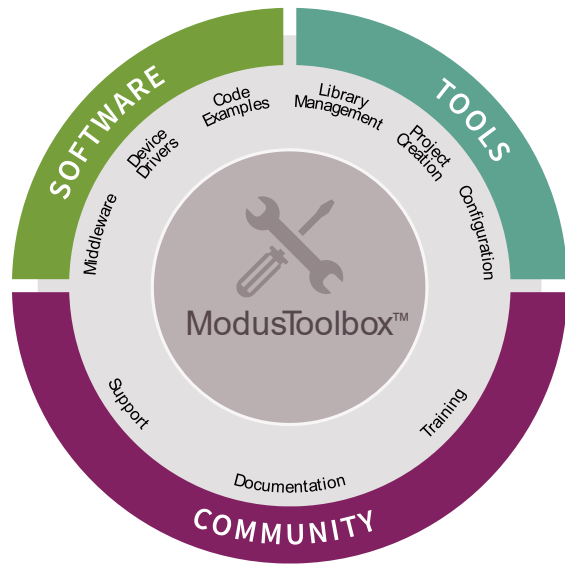
Other

– [Whitepaper: The touch sensing HMI in wearable and IoT devices](#)

Software



ModusToolbox™ Software – Overview



- > ModusToolbox™ software is a modern, extensible development environment supporting a wide range of Infineon microcontroller devices.
- > Provided as collection of development tools, libraries, and embedded runtime assets architected to provide a flexible and comprehensive development experience.

Development Tools

The ModusToolbox™ tools package includes desktop programs that enable the creation of new embedded applications, managing software components, configuring device peripherals and middleware, and embedded development tools for compiling, programming, and debugging.

Run-Time Software

The ModusToolbox™ software includes an extensive collection of GitHub-hosted repositories comprised of code examples, board support packages, middleware, and application support.

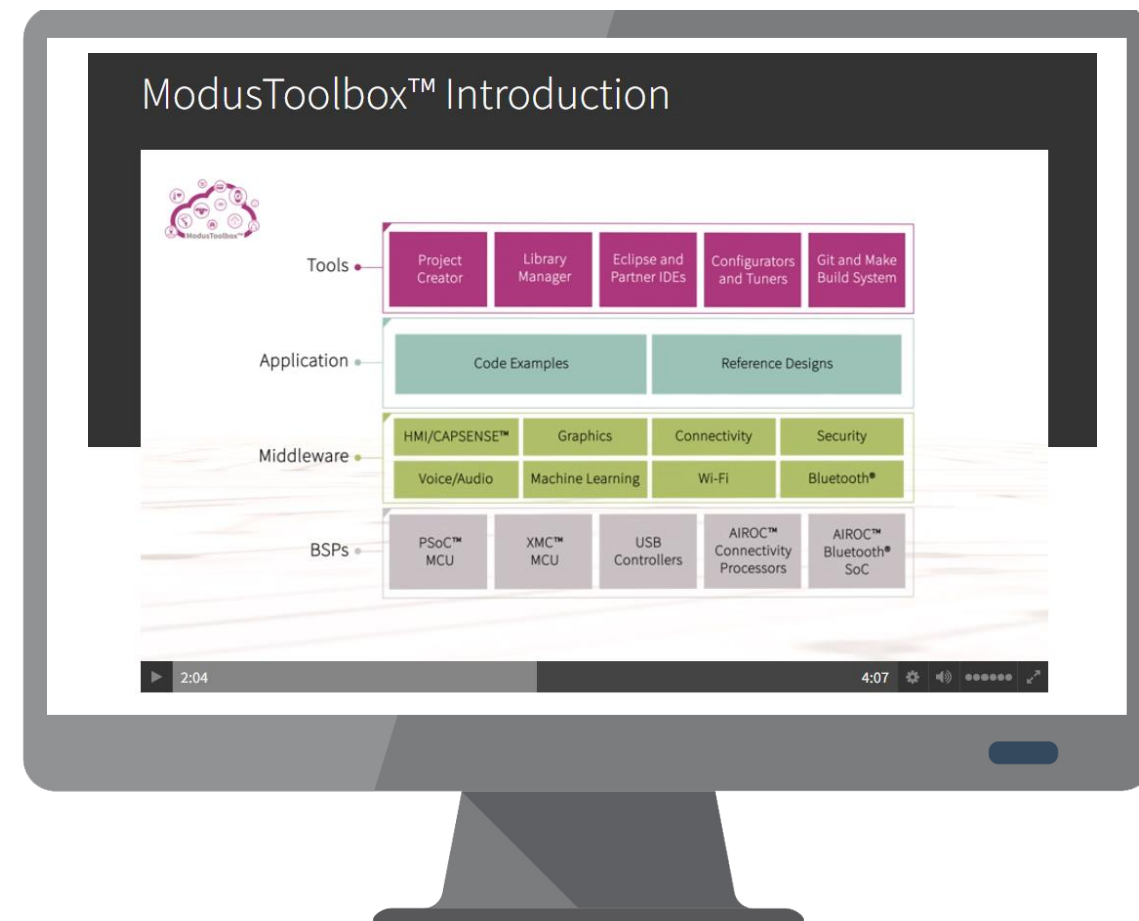
ModusToolbox™ Software Videos / Training

ModusToolbox™ Software Training

- ModusToolbox™ Software Training Level 1 - Getting Started
 - Introduction to tools within the ModusToolbox™ ecosystem
- ModusToolbox™ Software Training Level 2 – PSoC™ MCUs
 - PSoC™ 6 and PSoC™ 4 MCUs examples demonstrate the use of peripherals such as GPIOs, PWMs, ADCs, UARTs, etc. CAPSENSE™ and DMA
- ModusToolbox™ Software Training Level 3 - Bluetooth®
 - Exercises related to creating and debugging Bluetooth® application
- ModusToolbox™ Software Training Level 3 - Wi-Fi®
 - How to use Wi-Fi® within a ModusToolbox™ application

ModusToolbox™ Software Technical Videos

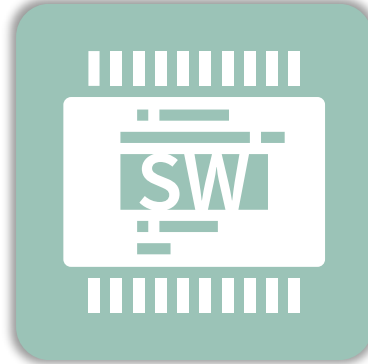
- Overview
 - [Introduction / Infographic Video](#)
- Getting Started
 - [Installation / Documentation / Creating an application / Exploring an application / Command-Line Interface](#)
- How-To
 - [Start with a new application / Blinky LED / PWM / GPIO Interrupt](#)



ModusToolbox™ Software – Key reference links for MCU



[ModusToolbox™ Software and Tools Product Page](#)



[ModusToolbox™ Software GitHub Repository](#)



[ModusToolbox™ Software Training Repository](#)



[ModusToolbox™ Community Forum](#)



PSoC™ 6

[PSoC™ 6 Peripheral Driver Library](#)
[Hardware Abstraction Layer \(HAL\)](#)
[PSoC™ 6 Code Examples](#)



PSoC™ 4

[PSoC™ 4 Peripheral Driver Library](#)
[PSoC™ 4 Code Examples](#)



XMC™

[XMC™ Peripheral Library](#)
[XMC™ Code Examples](#)



AIROC™ Wi-Fi + Bluetooth® Combos

- AIROC™ CYW43022: Ultra-low Power Dual-band Wi-Fi 5 (11ac) + Bluetooth®
- AIROC™ CYW5557x: Innovative solutions for premium Wi-Fi 6/6E connectivity combined with Bluetooth® in a single chip, designed for IoT applications



AIROC™ CYW43022

Customer Connector NPI

Infineon Technologies
September 2023



AIROC™ CYW43022: Ultra-low Power Dual-band Wi-Fi 5 (11ac) + Bluetooth® Combo for applications requiring long battery life



Battery-powered applications need a solution designed with low power in mind

Infineon Ultra-low power 1x1 Wi-Fi 5 (11ac) Dual-band Wi-Fi and Bluetooth® combo

- Ideal for battery-operated products
- Ultra-low power by design
- High quality radio and robust interoperability minimize air time
- Advanced security including firmware authentication and access restriction
- Specialized tools including low power assist & smart co-ex
- Best interoperability with access points and phones

43022: Industry standard for ultra-low power Wi-Fi and Bluetooth®



CYW43022: Low Power 1x1 DB Wi-Fi 5 + BT/BLE 5.4 Combo

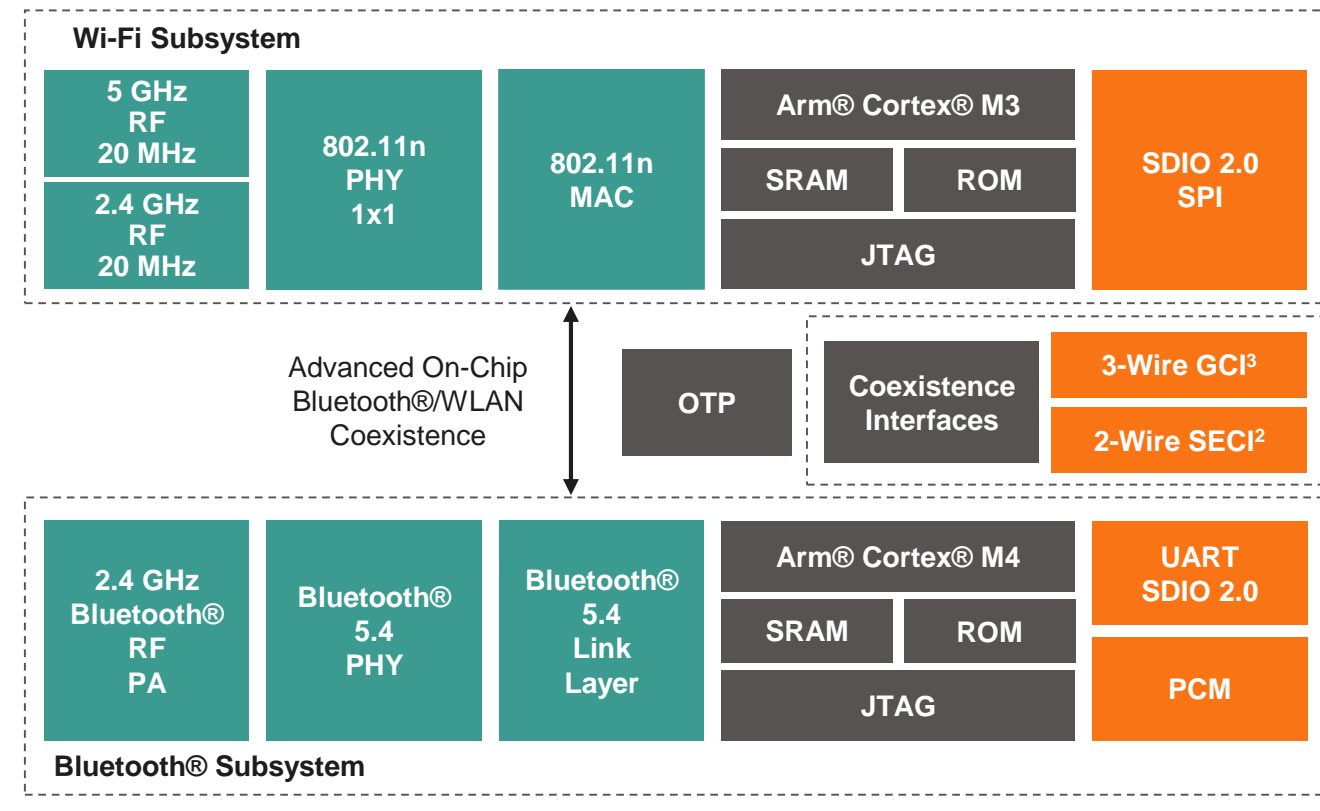
Features

- **802.11ac-compliant Wi-Fi**
 - Up to 78-Mbps data rate
 - Dual-band (2.4/5 GHz) with on-chip PAs and LNAs
 - SDIO 3.0 interface (up to 50 Mbps), SPI
 - 256-QAM support on 20 MHz channels in the 5 GHz band
- **New Deep Sleep mode enabling improved DTIM power states**
 - **80% lower sleep power**
 - Wi-Fi Networking Host Offloads
- **Bluetooth® 5.4**
 - All Bluetooth® 4.2 optional features and Bluetooth® 5.4, LE 2Mbps
 - **Class 1 BT PA +20dBm Transmit Power with updated output power control**
 - Bluetooth® stack host offloads
 - UART, PCM, **SDIO Shared with Wi-Fi**
- **Security**
 - **Secure boot with FW Image authentication using signed firmware**
 - **Access restriction**
 - **Memory/Trust Protection**
 - **Remote Procedure Execution Avoidance**
- **Packages (Pin-for-Pin Drop In for CYW43012)**
 - WLBGA, WLCSP

Applications

Wearables, IP Cameras, Door-Bells, Thermostats, Portable speakers, Battery-powered IoT

Wireless Connectivity Family | CYW43022



Availability

Samples: Now

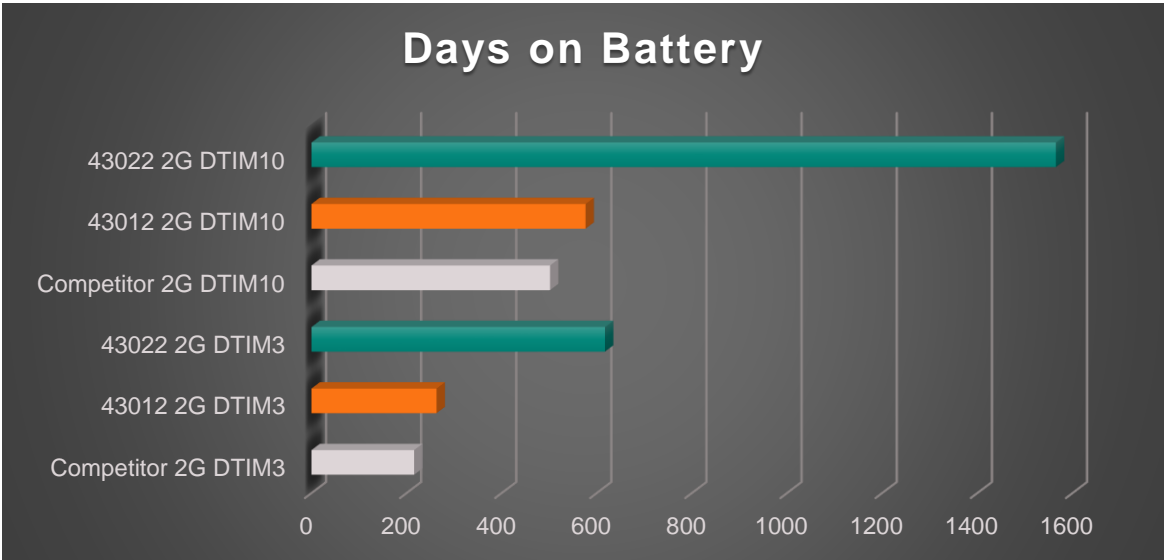
Production: Now

Ultra-Low-Power Wi-Fi – Product Enhancements to CYW43022

CYW43022 is a drop in 43012 replacement - updated features and fresh patch space for future CVEs

Low Power	<ul style="list-style-type: none"> - New Deep Sleep mode enabling improved always connected power
Security	<ul style="list-style-type: none"> - Secure boot with FW Image authentication using signed firmware - Access restriction - Memory Protection - Remote Procedure Execution Avoidance
Enhanced Connectivity	<ul style="list-style-type: none"> - Class 1 BT PA +20dBm Transmit Power including updated output power control
Advanced Features	<ul style="list-style-type: none"> - Single SDIO shared interface for Wi-Fi and Bluetooth®

43022 enables 2-3x longer Battery life



- 10 data exchanges per day, 100Kb TX, 10Kb RX for each exchange
- Based on CR123A battery (1550mAh / 3V)



AIROC™ CYW43022 Parts and Modules Supporting

Name	Infineon base parts	MOQ Units	Distributor Price(*)	Description	Op. Temp (C)	Package
AzureWave AW-AM617 wireless module	CYW43022	7500	Contact Partner	Certified module from AzureWave using CYW43022	-20°C to +70°C	12 x 12 x 1.75 mm module
CYW43022CUBT	CYW43022	1000	NA	Dual-band Wi-Fi 5 + Bluetooth® 5.4 combo SoC (WLBGA)	-20°C to +70°C	106-ball WLBGA (3.76 x 4.43 mm, 0.35-mm ball pitch)
CYW43022CWBT	CYW43022	1000	NA	Dual-band Wi-Fi 5 + Bluetooth® 5.4 combo SoC (WLCSP)	-20°C to +70°C	251-pin WLCSP (3.76 x 4.43 mm, 0.2-mm ball pitch)
Murata LBEE5WV2GF-924 type 2GF wireless module	CYW43022	2000	Contact Partner	Certified module from Murata using CYW43022	-20°C to +70°C	10.0 x 7.2 x 1.4 mm module



Guiding questions – CYW43022

Summary of key arguments

- › The CYW43022 extends Infineon's leadership in ultra-low-power Wi-Fi with a new deep sleep mode that is 70% lower power than the previous generation low-power device. The CYW43022 is well suited for battery-powered applications.
- › The CYW43022 includes network offloads that allow products to maintain connection to the cloud while the host processor is in sleep mode.
- › The CYW43022 includes on-chip embedded Bluetooth profiles to offload Bluetooth stack support from a host processor allowing it to remain in sleep mode during Bluetooth® activity.
- › The CYW43022 offers both 2.4 and 5GHz radios to address the increasingly congested Wi-Fi environment.
- › A CYW43022 extended range reference design including ePA (external Power Amplifier) circuitry is available.
- › A +20dBm internal Bluetooth® PA optimizes Bluetooth® and BLE RF performance even in difficult environments.
- › Smart Coexistence technology to optimize concurrent Wi-Fi and Bluetooth® performance.
- › Rapid time-to-market with multiple partner modules integrating the CYW43022 with full global certifications and support for Linux, Android, and RTOS.

Questions to ask (to customers)

1. Is low power consumption critical for your design?
2. Do you need your device to stay connected and operate smoothly in congested environments?
3. Will your product be placed in an extended distance from AP?
4. Do you need reliable BT/BLE performance even with a small or compromised antenna?
5. Do you want to optimize Wi-Fi and Bluetooth performance when running them concurrently?
6. Do you have any certification / regulatory experience in-house for Wi-Fi devices?
7. How much Wi-Fi and Bluetooth software development experience does your engineering team have? What operating system do you require?



Wi-Fi | Invest in growth together

Strengthen Expertise

Improve Wi-Fi capability

- 1) **Learn More:** [CYW43022](#) overview
- 2) **Attend:** Distributor Training Academy: February 5th and 9th
- 3) **Review:** Low Power Presentation on myInfineon
- 4) Visit Infineon [Community](#)

Engage Module Vendors

Murata 2GF - Feb 2024

[Murata](#) [link EA](#)

Azurewave [AW-AM617](#) – Available now

USI WM-BAC-CYW-22 - Q324

[Module Selector Guide](#)

Register Opportunities in IDIS using SoC part number.

Line Comments Field: *Module Maker Name, Part Number*

Drive Demand Creation

Leverage customer collateral

- › [Short Form NPI](#)
- › [Long Form NPI](#)
- › [Product Brief](#)

Target Applications

Applications requiring low power Wi-Fi

- › Wearables
- › IP Cameras
- › Smart Locks
- › Thermostats
- › Smoke Detector
- › Portable speakers
- › Small Home Appliance
- › Electric Toys
- › Remotes



Getting Started



Web Pages

- [AIROC™ CYW43022 Product Page](#)

Development Kits, Module Partners, and Software

- [Linux / Android Driver Download](#)

Sales Enablement Collateral

- [AIROC™ CYW43022 Presentation](#)
- [AIROC™ CYW43022 Product Brief](#)
- Datasheet by request on: [MyCases](#)

Developer Community (For Technical Support)

- [AIROC™ Wi-Fi and Wi-Fi Bluetooth Combos Forum](#)

Other

- [Module Selector Guide](#)
- [Module Partner Catalog: Azurewave, Murata](#)







AIROC™ CYW5557x Customer Connector

Infineon Technologies
June 2023



AIROC™ CYW5557x Family: Unique Differentiations

CYW5557x Family

2x2 for high performance
1x1 for low power

- Release 1 and 2 features
- Tri-Band: 2.4GHz, 5GHz, 6GHz
- MU-MIMO, OFDMA, 1024QAM
- 1.2Gbps max. PHY data rate
- Soft AP and Station modes



Infineon Enhancements

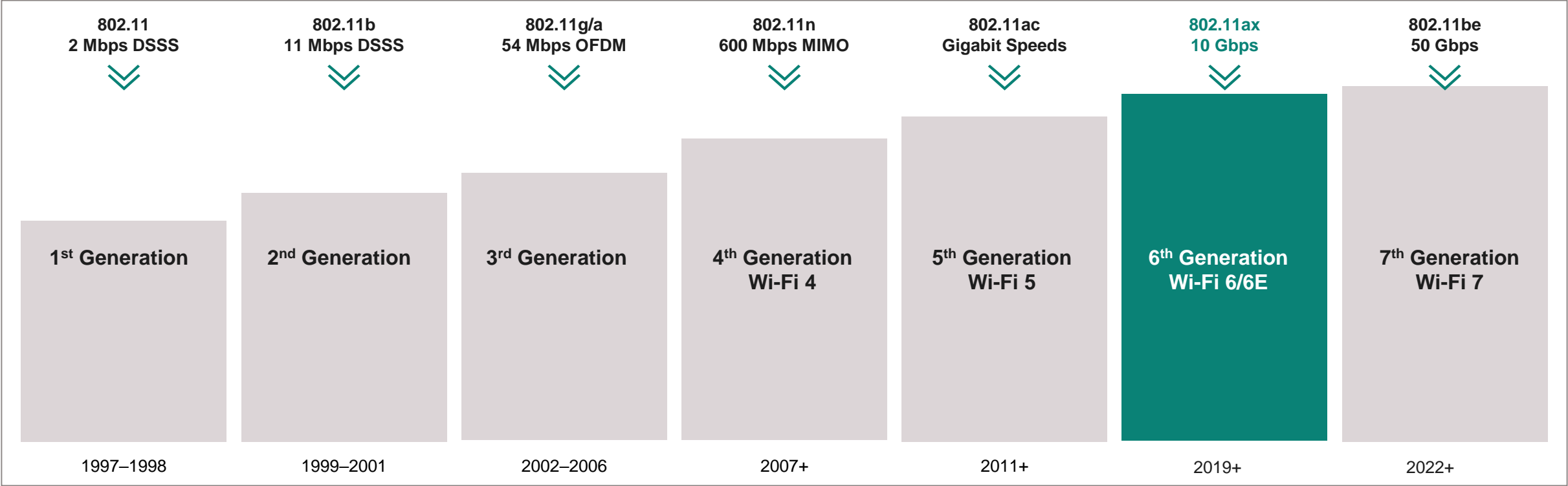


- Network robustness
- Longer range
- Lower power
- Smart CoEx for Wi-Fi/Bluetooth
- Enhanced security & protection



Wi-Fi 6 Improves Network Efficiency and User Experience

Wi-Fi 6 improves range, network efficiency, and power consumption over Wi-Fi 5



AIROC™ CYW5557x : Various Products with compatible footprint

Wi-Fi 6



2x2 MIMO

80 MHz

Dual-band 2.4/5 GHz

Max. **1,200 Mbps**

PCIe, SDIO

Bluetooth 5.3



1x1 SISO

80 MHz

Dual-band 2.4/5 GHz

Max. **600 Mbps**

PCIe, SDIO

Bluetooth 5.3

FCBGA, 0.65 mm pitch
WLBGA, small form factor, 0.35 mm pitch

- Integrated with iPA, iLNA, PMU to save BOM cost
- Small form factor

Wi-Fi 6E



2x2 MIMO

80 MHz

Tri-band 2.4/5/6 GHz

Max. **1,200 Mbps**

PCIe, SDIO

Bluetooth 5.3



1x1 SISO

80 MHz

Tri-band 2.4/5/6 GHz

Max. **600 Mbps**

PCIe, SDIO

Bluetooth 5.3

FCBGA, 0.65 mm pitch
WLBGA, small form factor, 0.35 mm pitch

- Multiple products tailored to a range of applications
- Footprint compatible in the product family



CYW5557x Feature Overview

Applications

Smart speaker, surveillance cameras, gaming console, High-definition speaker, security hub, industrial gateway, VR/AR, AI enabled devices

Features

Wi-Fi/WLAN Features

- 802.11b/g/n/ac/ax compliant, Tri-band (55573), Dual-Band (55572)
- 5/6 GHz: 20/40/80 MHz, 1024-QAM, up to 1.2 Gbps data rate
- 2.4 GHz: 20/40 MHz, 1024-QAM, up to 287 Mbps data rate
- 802.11ax STA mode and Soft AP mode
- Supports 802.11d, h, k, r, v, w, ai
- WPA3: AP and STA

Bluetooth® Features

- Bluetooth® 5.3 (BR + EDR + BLE) certification
- All Bluetooth® 5.0 / 5.1 / 5.2 optional features
- Dedicated Bluetooth® path for best Coex performance

Interfaces

- PCIe Gen2 (3.0 Compliant), SDIO for WLAN
- HCI-UART, PCM/ I2S for BT

Coexistence

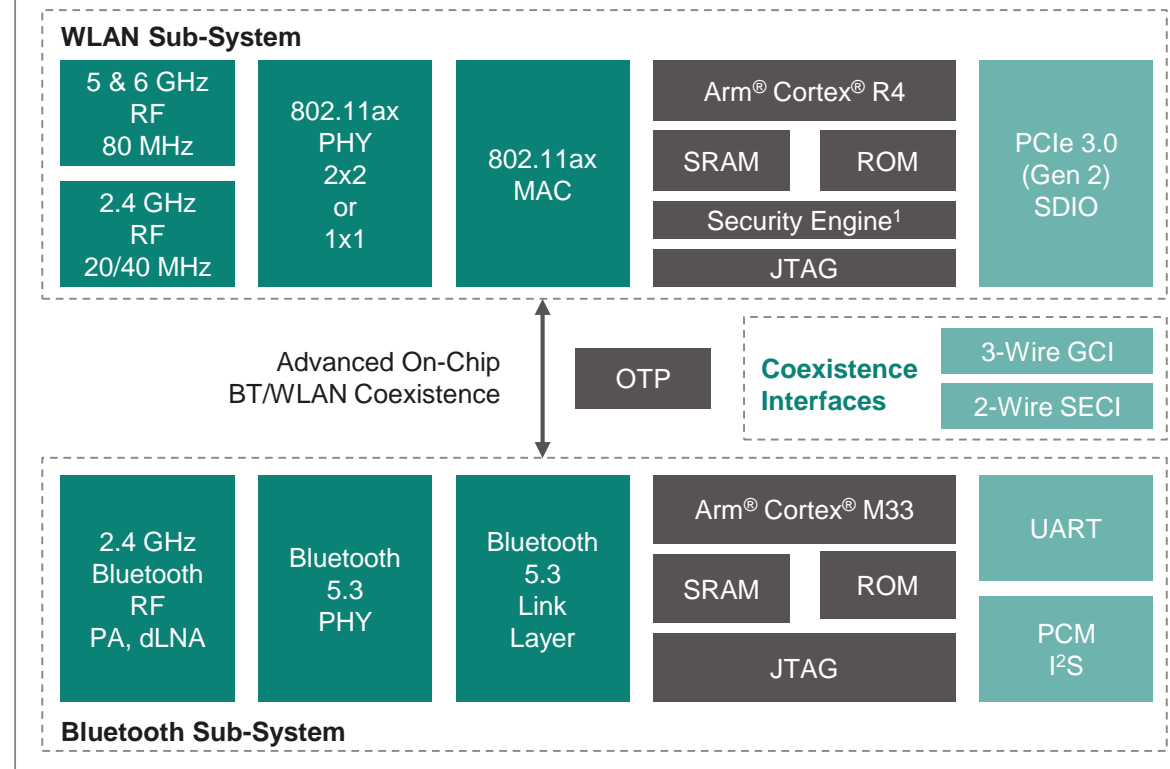
- Built-in advanced algorithms for Bluetooth®/WLAN coexistence
- 2-wire SECI for external third-party Bluetooth®/GPS/LTE/802.15.4 radios

Package

- FCBGA: 0.65 mm ball pitch
- WLPGA: Small form factor (0.35 mm ball pitch)

Temperature: -40°C to 85°C

Wireless Connectivity Family | 55573/2/1




Availability

Samples: Now

Production: Now


Target Application Examples




Machine vision




Smart building




Surveillance camera




Wireless audio



Smart speaker



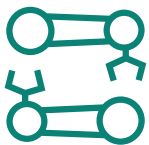
Video streaming



Mobile Gateway



Leisure & fitness



Service robots



Healthcare

Hardware and Software Support to shorten time-to-market

CYW5557x Modules



- [Murata Type 2EA](#)
- [Embedded Artist](#)



- [AW-XH316](#)
- [AW-XB533NF-PUR](#)



WM-BAX-CYW-61



- [Sona™ IF573](#)

[Full list of Modules](#)

Software

Linux
[Kernel 5.15.](#)
Android
[Android12/13](#)
AIROC Bluetooth Stack + Example code
 In Community

Platform

Nvidia Jetson Xavier/Nano/Orin	Raspberry Pi CM4
Rockchip RK3568, RK3588	NXP i.MX 8
Ambarella CV2x, H22	STM Coming soon

Getting Started

Reference Board

- [Embedded Artist M.2](#)
- [Laird M.2 \(Sona™ IF573\)](#)

More Information:

- [CYW5557x Product Page](#)
- [CYW55571](#)
- [CYW55572](#)
- [CYW55573](#)



Easy Development – Modules available from multiple vendors

Customized tools for Wi-Fi diagnostics and certification

Rich and extensive software tools

Family of development kits get you started quickly

Modules Supporting AIROC™ CYW5557x

Module Partner Name	Infineon base parts	Module part #	MOQ Units	Distributor Price(*)	Wi-Fi/BT	Op. Temp (C)	WLAN I/F	BT I/F	Antenna #	Size	Module Type	Host/Hostless
Murata Manufacturing Co., Ltd.	CYW55573	LBEE5XV2EA-802	2000	\$13.10	WiFi6E 2x2 MIMO (2.4GHz/5GHz/6GHz) Bluetooth 5.3	-40~+85	SDIO PCIe	UART	2 ANT (BT shared) 3 ANT (BT dedicated)	L x W: 12.5 x 9.40mm (Typ) T: 1.20 mm (Max)	Shielded Resin	Host
Laird Connectivity	CWY55573	453-00117	TBD	TBD	Wi-Fi 6E/BT 5.4	-40 to +85	SDIO	HS-UART	2x Wi-Fi, 1x BT	13x18x1.9	M.2 1318 SMT	Host
Laird Connectivity	CWY55573	453-00118	TBD	TBD	Wi-Fi 6E/BT 5.4	-40 to + 85	PCIe	HS-UART	2x Wi-Fi, 1x BT	13x18x1.9	M.2 1318 SMT	Host
Laird Connectivity	CWY55573	453-00119	TBD	TBD	Wi-Fi 6E/BT 5.4	-40 to + 85	SDIO	HS-UART	2x Wi-Fi, 1x BT	22x30x2.7	M.2 1318 SMT	Host
Laird Connectivity	CWY55573	453-00120	TBD	TBD	Wi-Fi 6E/BT 5.4	-40 to +85	PCIe	HS-UART	2x Wi-Fi, 1x BT	22x30x2.7	M.2 1318 SMT	Host
Laird Connectivity	CWY55573	453-00119-K1	TBD	TBD	Wi-Fi 6E/BT 5.4	-40 to + 85	SDIO	HS-UART	2x Wi-Fi, 1x BT	DVK Kit - TBD	DVK	Host
Laird Connectivity	CWY55573	453-00120-K1	TBD	TBD	Wi-Fi 6E/BT 5.4	-40 to + 85	PCIe	HS-UART	2x Wi-Fi, 1x BT	DVK Kit - TBD	DVK	Host
AZUREWAVE	CYW55571MIWBGT	AW-XH325	11000	NA	802.11 a/b/g/n/ac/ax; BT 5.2	-40 to + 85	PCIe/SDIO	UART	Antenna path only; no antenna	10x10x1.26	SiP	Host
AZUREWAVE	CYW55571MIWBGT	AW-XB614	1600	NA	802.11 a/b/g/n/ac/ax; BT 5.2	-40 to + 85	PCIe/SDIO	UART	Antenna path only; no antenna	22x30x2.06	M.2 2230	Host
AZUREWAVE	CYW55572MIWBGT	AW-XH316	12500	NA	802.11 a/b/g/n/ac/ax; BT 5.2	-40 to + 85	PCIe/SDIO	UART	Antenna path only; no antenna	12x13x1.21	SiP	Host
AZUREWAVE	CYW55572MIWBGT	AW-XB533	1600	NA	802.11 a/b/g/n/ac/ax; BT 5.2	-40 to + 85	PCIe/SDIO	UART	Antenna path only; no antenna	22x30x2.06	M.2 2230	Host
AZUREWAVE	CYW55572MIUBGT	AW-XM612	3200	NA	802.11 a/b/g/n/ac/ax; BT 5.2	-40 to + 85	PCIe/SDIO	UART	Antenna path only; no antenna	13x15x1.95	LGA	Host
AZUREWAVE	CYW55573MIWBGT	AW-XH323	11000	NA	802.11 a/b/g/n/ac/ax; BT 5.2	-40 to + 85	PCIe/SDIO	UART	Antenna path only; no antenna	10x10x1.26	SiP	Host
AZUREWAVE	CYW55573MIWBGT	AW-XB583	1600	NA	802.11 a/b/g/n/ac/ax; BT 5.2	-40 to + 85	PCIe/SDIO	UART	Antenna path only; no antenna	22x30x2.06	M.2 2230	Host
AZUREWAVE	CYW55573MIWBGT	AW-XH318	12500	NA	802.11 a/b/g/n/ac/ax; BT 5.2	-40 to + 85	PCIe/SDIO	UART	Antenna path only; no antenna	12x13x1.21	SiP	Host
AZUREWAVE	CYW55573MIWBGT	AW-XB569	1600	NA	802.11 a/b/g/n/ac/ax; BT 5.2	-40 to + 85	PCIe/SDIO	UART	Antenna path only; no antenna	22x30x2.06	M.2 2230	Host
USI	CYW55572MIWBGT	WM-BAC-CYW-51	5000	NA	802.11 ax/ac/b/g/n; BT 5.2	-40 to + 85	PCIe/SDIO	UART	Antenna path only; no antenna	11x11x1.2	SiP	Host
USI	CYW55573MIWBGT	WM-BAC-CYW-61	5000	NA	802.11 ax/ac/b/g/n; BT 5.2	-40 to + 85	PCIe/SDIO	UART	Antenna path only; no antenna	11x11.1.2	SiP	Host



Getting Started



Web Pages

- [Wi-Fi 6/6E \(802.11ax\)](#)
- [CYW55571](#), [CYW55572](#), [CYW55573](#)

Development Kits, Module Partners, and Software

- [Embedded Artist](#)
- [Sona™ IF573](#)
- [Linux / Android Driver Download](#)

Sales Enablement Collateral

- [AIROC™ CYW5557x Presentation](#)
- [AIROC™ CYW5557x Product Brief](#)
- Datasheet by request on: [MyCases](#)

Developer Community (For Technical Support)

- [AIROC™ Wi-Fi and Wi-Fi Bluetooth Combos Forum](#)

Other

- [Module Selector Guide](#)
- [Module Partner Catalog: Azurewave, Laird, Murata, USI](#)



Wi-Fi | Invest in growth together

Strengthen Expertise

Improve Wi-Fi capability

- 1) **Watch recorded:** Distributor Training Academy: [June 5th and 9th](#)
- 2) Visit Infineon [Community](#)

Engage Module Vendors

Murata - July 2023
Laird - September 2023
Azurewave - Q2'2023
USI - Q3'2023

[Module Partner Catalog](#)
[Azurewave](#), [Laird](#), [Murata](#), [USI](#)

[Module Selector Guide](#)
[Wi-Fi 6/6E \(802.11ax\)](#)
[CYW55571](#)
[CYW55572](#)
[CYW55573](#)

Drive Demand Creation

Leverage customer collateral

- › [Short Form NPI](#)
- › [Long Form NPI](#)
- › [CYW5557x Video](#)

Target Applications

Target attack and full field engagement with IFX

- › Machine vision
- › Smart building
- › Surveillance cameras
- › Wireless audio
- › Smart Speaker
- › Video streaming
- › Mobile gateway
- › Leisure and fitness
- › Service robots
- › Healthcare



Guiding questions – CYW5557x

Summary of key arguments

- › 6GHz is new open and clean spectrum in which your product maintain high quality video/audio/data streaming with minimum latency, jitter, and noise
- › 5557x family offers range boost features on top of standard Wi-Fi 6 range extension features. Your product can reach at least 40% farther than other Wi-Fi 6 and 6E device in the market.
- › Enhance features for listening mode to reduce chip power consumption and advanced offload features to free up host processor and memory , and reduce total system power consumption
- › Smart Coexistence technology to optimize concurrent Wi-Fi and Bluetooth performance
- › LE audio broadcasts audio to multiple speakers or headsets
- › Fully tested Bluetooth stacks and example code to shorten development cycle
- › Rapid time-to-market with multiple partner modules integrating AIROC™ 5557x with full global certifications, platform partners, and different OS.
- › Industrial temperature grade to perform at hash environment
- › Remote Cloud Network Analysis enabled by Cirrent IoT Network Intelligent
- › Comprehensive and extensive tests for various use cases
- › Infineon Developer Community support with direct access to online applications support engineers

Questions to ask (to customers)

1. Do you want your device stay connected in congestive environment ?
2. Will your product be placed in extended distance from AP?
3. Is low power consumption critical for your system ?
4. Do you want to optimize Wi-Fi and Bluetooth performance when running them concurrently?
5. Do you want to monitor network health remotely from cloud?
6. Will your device expose to temperature -45 C to 85C?
7. Do you need longer range of Bluetooth without an ePA?
8. Will you use LE audio to broadcast or multicast audio?
9. Do you want an easy-to-use and fully tested Bluetooth stack and code example to shorten development cycle?
10. Do you have any certification / regulatory experience in-house for Wi-Fi devices?
11. How much Wi-Fi and Bluetooth software development experience does your engineering team have? What operating system you develop on ?
12. What are the module form factor, temperature grade, and cost point for your application?







OPTIGA™ Trust M MTR

The easiest way to add Matter and security to your smart home devices



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1	A matter of simplicity - introduction to the Matter smart home standard	3
2	A matter of security - how Matter gives you a peace of mind	7
3	Challenges in enabling Matter-based smart home devices	10
4	Introducing OPTIGA™ Trust M MTR	13
5	Getting started	24
6	Key takeaways	26

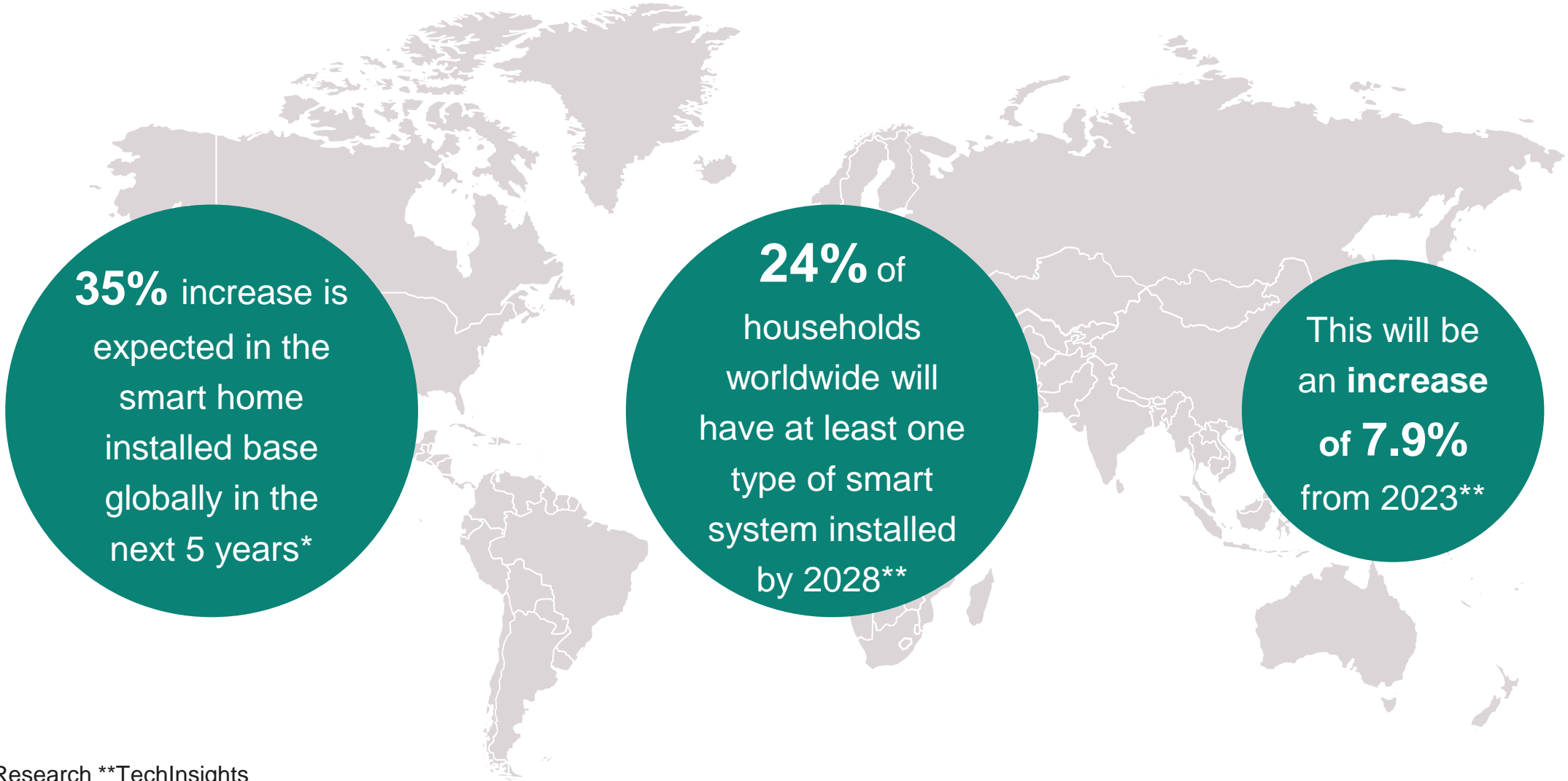


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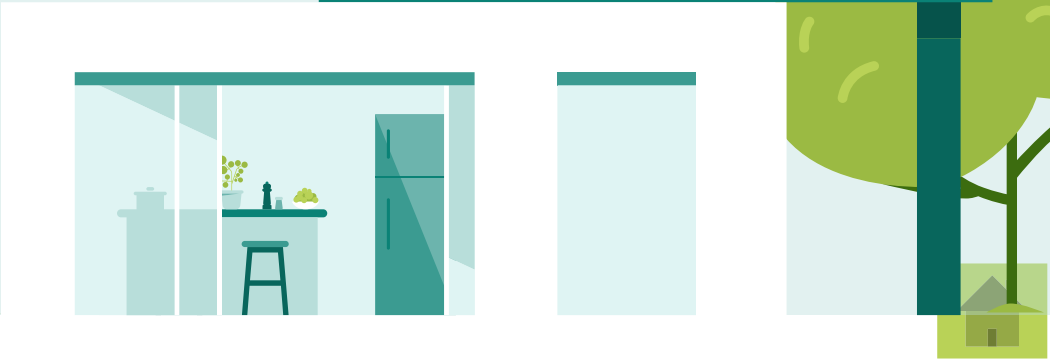
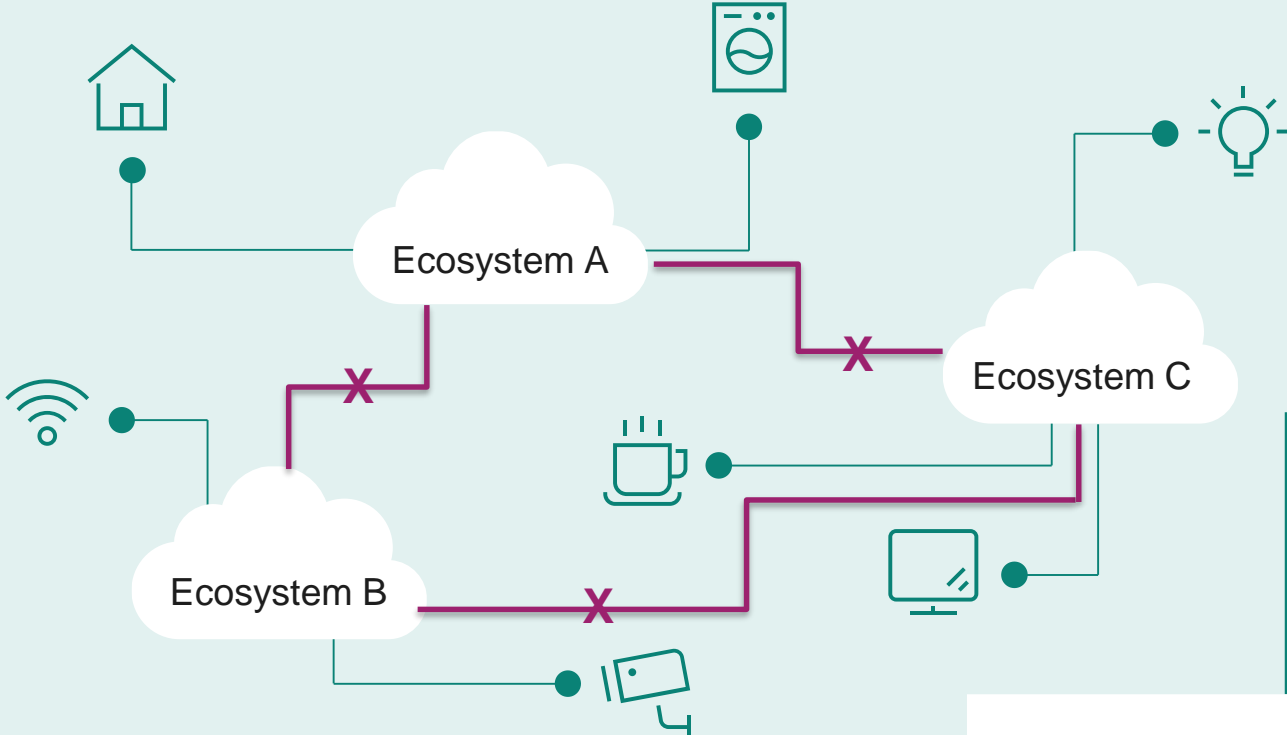


The smart home market is growing



*ABI Research **TechInsights

Lack of interoperability is still an issue in smart homes



Matter

A new unifying protocol to connect smart home devices securely and reliably to each other and to the various popular smart home ecosystems.

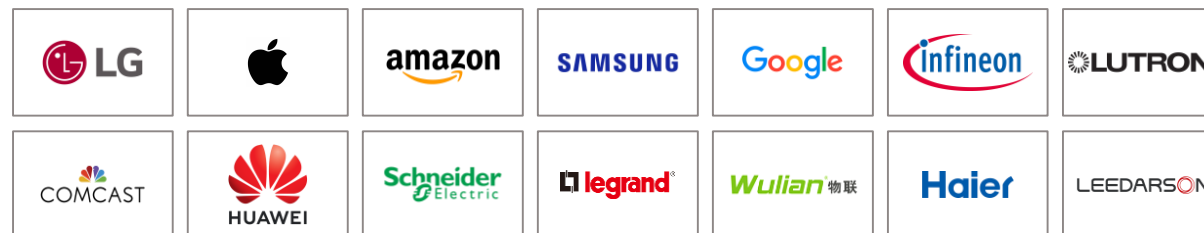
Matter defines a set of principles in support of consistent security and privacy measures for the smart home.



CSA is developing, promoting and certifying the Matter connectivity standard

- On CSA Board of Directors
- A leader and contributor in Matter security groups
- **600+ companies** engaged in developing the specification
- **5.5B+** Smart Home Matter-compliant devices will ship by 2030¹

Some of CSA's key members and promoters of Matter²



¹Source: ABI research, Matter and its smart home impact, Jan 21, 2022

² Source: <https://csa-iot.org/members/>



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The impact of security threats in a smart home

Unauthorized access

Unauthorized monitoring, theft of personal information, physical harm

Data privacy

Ranging from targeted advertising to identity theft

Malware and cyberattacks

Infiltration of home networks; launch attacks on other systems



Potential impacts on users

- Personal safety
- Invaded privacy
- Disrupted services

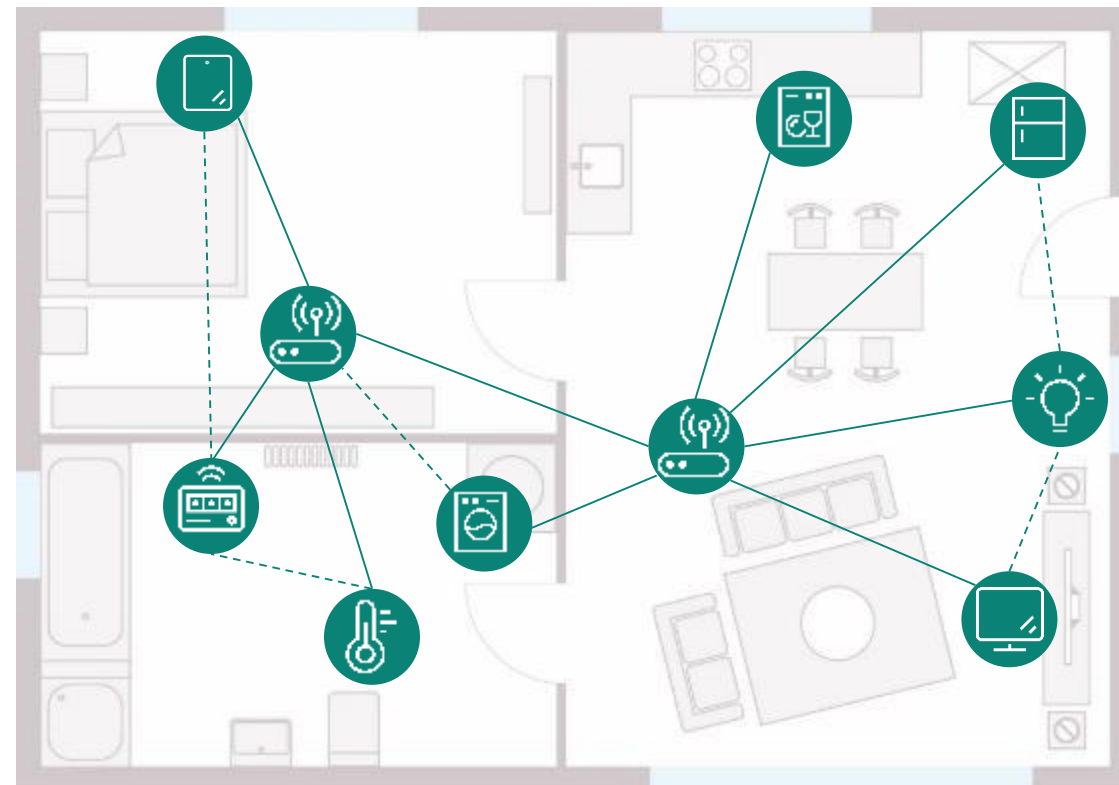
Potential impacts on brands

- Reputation damage
- Financial loss
- Liability

Security and Matter go hand-in-hand

Matter raises the bar for IoT security and privacy*

1. Easy, secure, and flexible device commissioning
2. **Validation that each device is authentic and certified**
3. **Up-to-date info via Distributed Compliance Ledger**
4. **Strong device identity so only your devices can join your smart home**
5. Secured unicast communications
6. Secured group communications
7. Multiple administrators and controllers, maximizing choice
8. Verified access controls to prevent unauthorized actions
9. Secured, standard software updates
10. Verification of software integrity



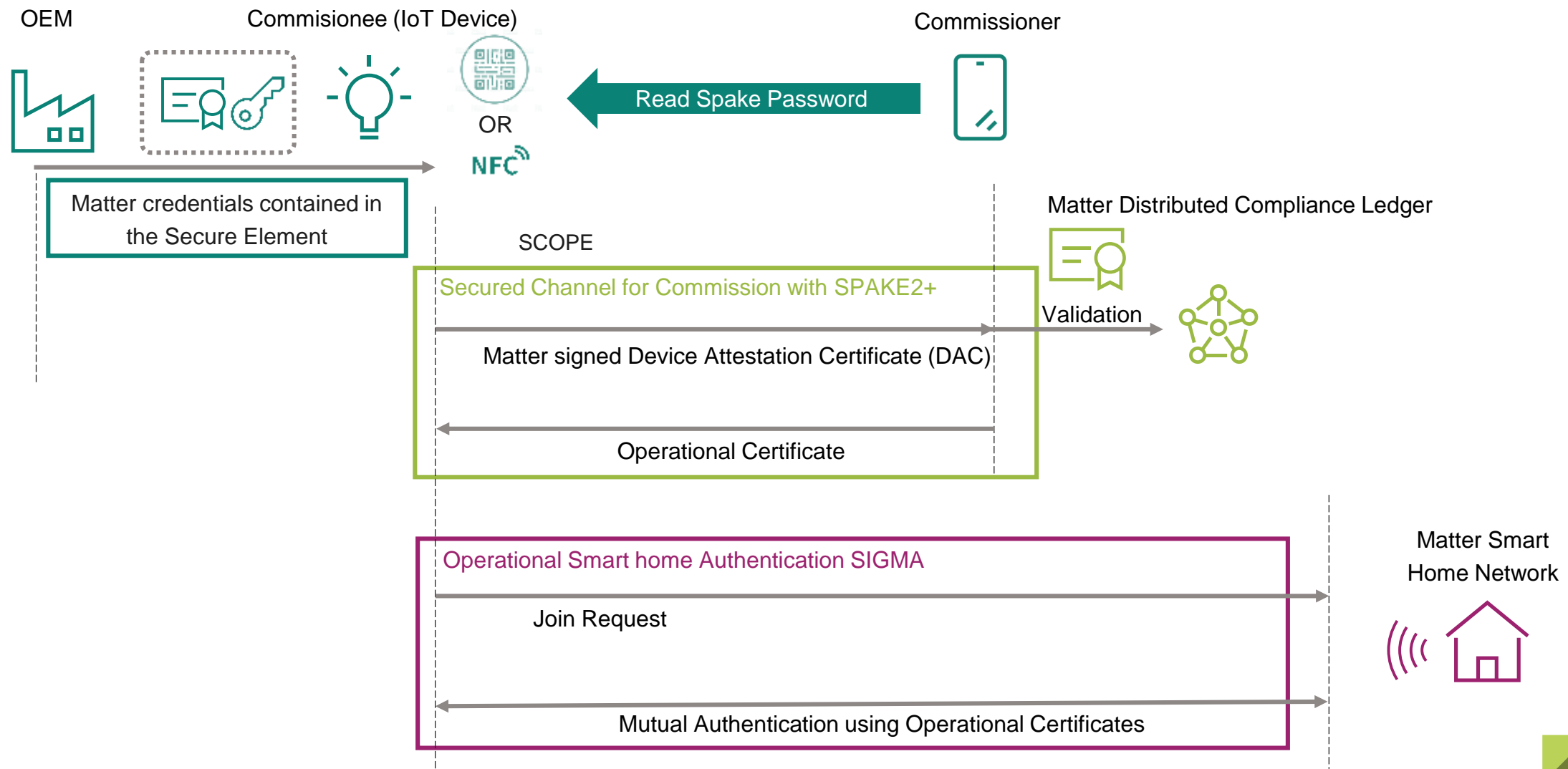
*List source: Connectivity Standards Alliance (CSA)

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Matter onboarding flow



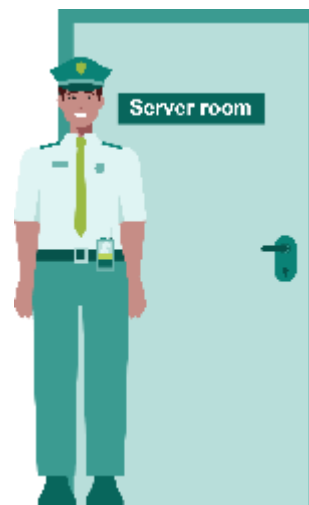
Building Matter devices the old way



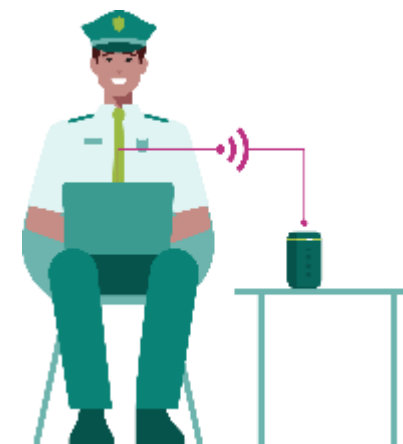
1. Create Root CA
Highly secured signer in
secured facility



2. Create Intermediate CAs
Signers that issue DACs



3. Install Intermediate CAs
Place in secured location at each
factory with trusted operator



4. Install DACs
Generate DACs and install into
devices in factory

Expensive, complex, risky, and disruptive

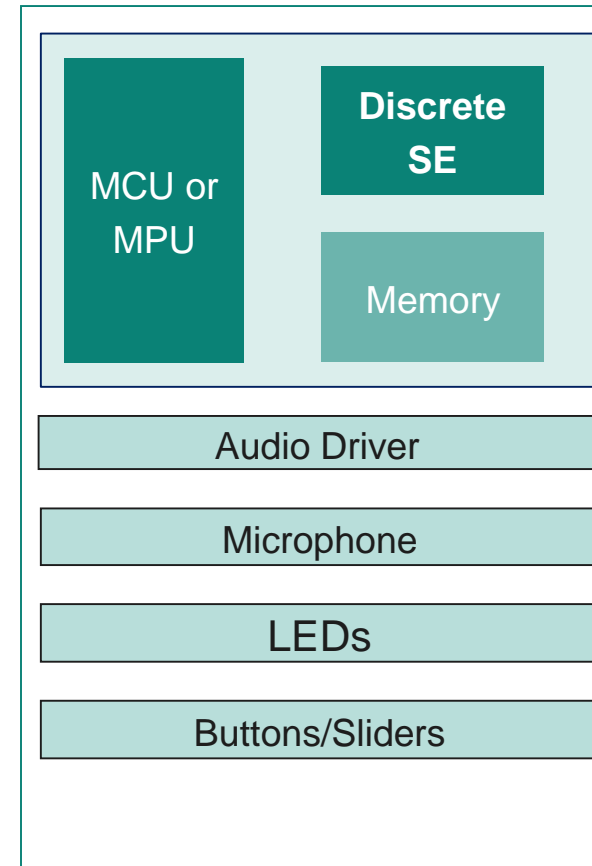
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Simplifying the Matter onboarding flow with a discrete Secure Element (SE)

A discrete Secure Element is a specialized, tamper-resistant companion of an MCU that can be added to a system to perform security-related functions



Introducing OPTIGA™ Trust M MTR



OPTIGA™ Trust M MTR is Infineon's
OPTIGA™ Trust M discrete security solution
with a Matter provisioning service

**The easiest way to add
secured Matter
compatibility to your
existing design**

OPTIGA™ Trust M MTR is the easiest way to add secured Matter compatibility to your existing design



Challenges

Provisioning of Matter certificates

Time to market

Flexibility

Security of smart home devices



Solution

OPTIGA™ Trust M MTR is a pre-provisioned discrete SE which simplifies the process of adding Matter certificates to your devices.

OPTIGA™ Trust M MTR allows to keep your existing design as it can be inserted into any MCU/SoC design

With OPTIGA™ Trust M MTR DACs can be downloaded right up until the start of production. This gives OEMs the flexibility to decide on product variants after ordering the security chips.

With its Common Criteria (CC) EAL6+ certified hardware, OPTIGA™ Trust M MTR can achieve consistent tamper-resistant protection supported by the Matter standard.



Matter hierarchy

Every Matter device must come with a **unique identity**, which shows that this is a certified and authentic Matter device. This is provided by the device attestation certificate

Matter Product Attestation Authority (PAA)

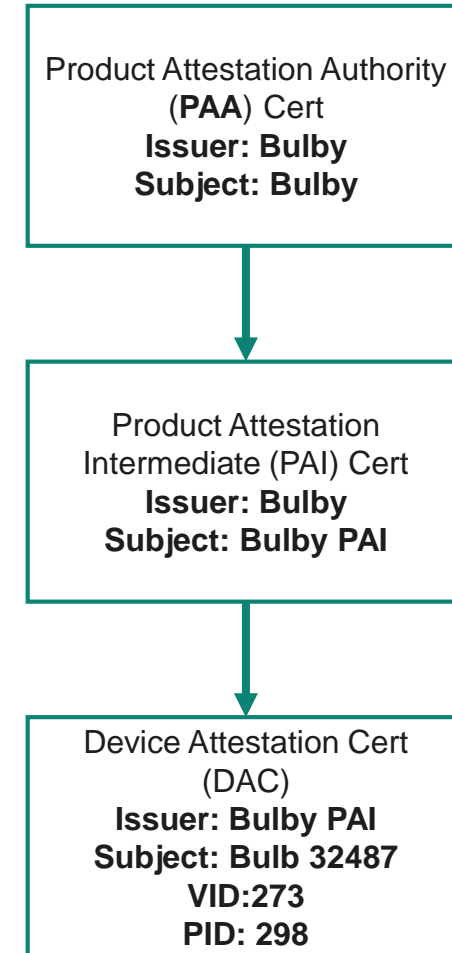
- PAA is a CSA certified member, authorized to issue Matter DACs

Vendor Product Attestation Intermediate (PAI)

- PAA issues an intermediate PAI. PAI includes the member`s CSA vendor ID (VID). As an option, the Product ID (PID) can also be included to generate DAC

Vendor Device Attestation Certificates (DAC)

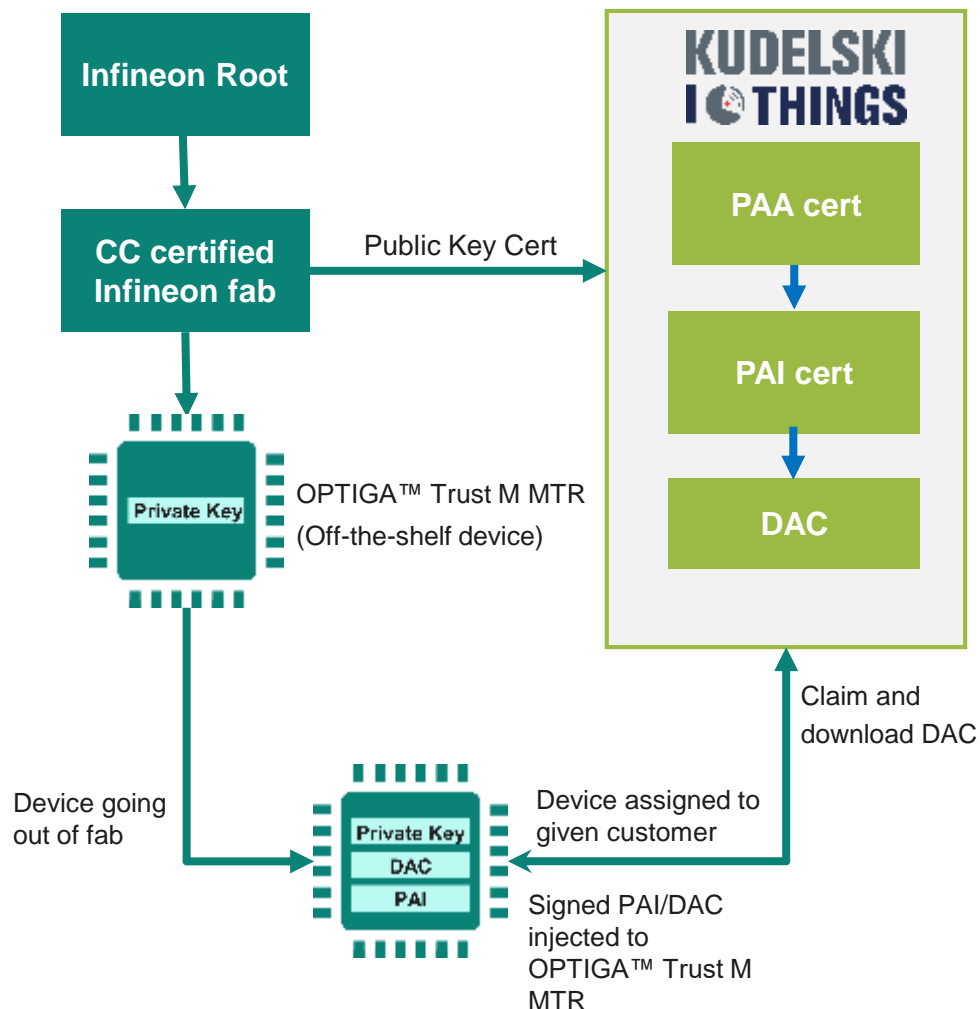
- PAA provides certificate services for signing DACs, which includes a PID and VID
- Each product will need a specific DAC assigned by the PAI



OPTIGA™ Trust M MTR Public Key Infrastructure (PKI) offering

Infineon certificates and keys are injected in our CC certified fabs

- Private and public keys are injected into the device
- Private key protected inside the device, making it highly secure
- Device and reel IDs are shared with Kudelski IoT to generate the corresponding DAC
- OPTIGA™ Trust M MTR is an off-the-shelf product



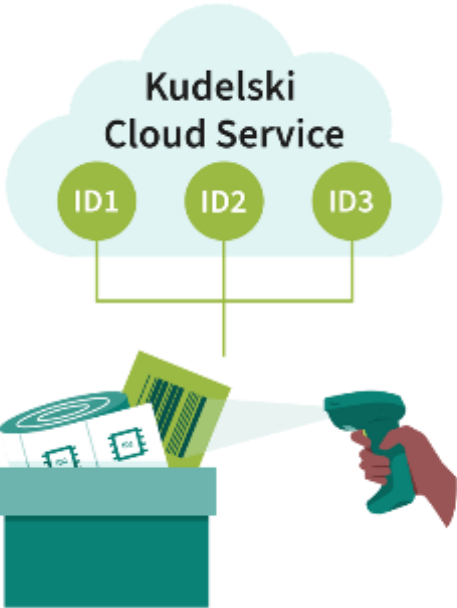
Late-stage provisioning by Kudelski IoT

- Late-stage provisioning allows the DACs to be downloaded at the OEM facility during equipment manufacturing.
- PAI and DACs are injected into the device at the OEM's manufacturing facility
- Late-stage provisioning means the PID can be changed right up until the start of production, allowing OEMs to create multiple variants of the end product

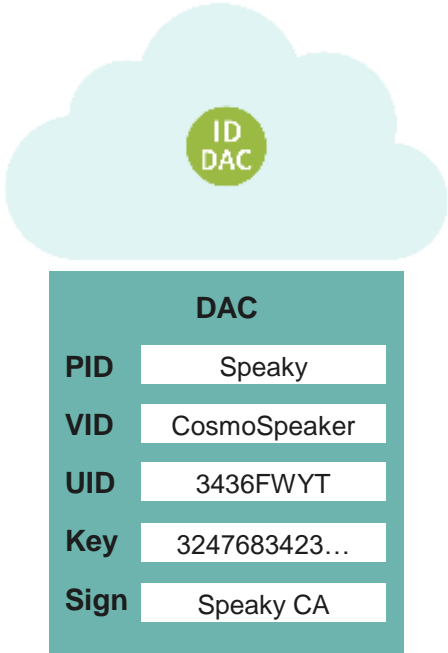
Building Matter devices with OPTIGA™ Trust M MTR



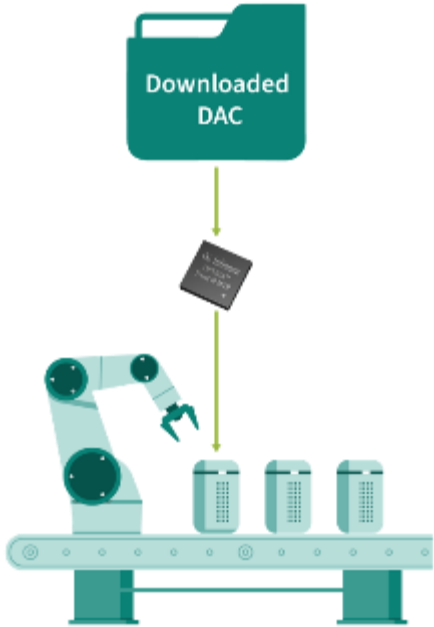
1. Pre-Production
 Order Kits & Samples
 Create DAC for testing samples



2. Order & Claim
 Order reel(s) with pre-provisioned chip IDs and claim the reel using the ID



3. Late-stage provisioning
 Update DAC online (e.g. in case of product change) and download



4. DAC insertion
 Insert DACs into OPTIGA™ Trust M MTR in assembly line

Simple, easy, and secured



OPTIGA™ Trust M MTR can be used for any smart home application



Lighting



Blindes/Shades



Climate Control



Television



Access Control



Surveillance camera, alarm



Gateway Access Point



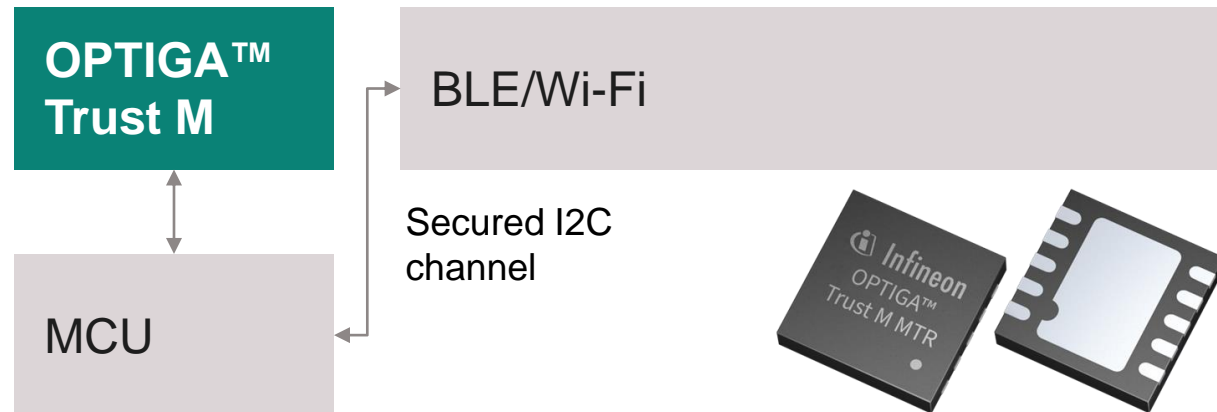
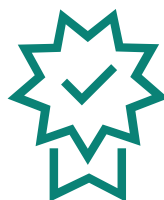
Speaker
... and many more



OPTIGA™ Trust M MTR detailed product overview

Key Features

- Enabling Matter and Security for Smart Home Devices in a faster way
- Pre-provisioned ECC & RSA Certificates for quick onboarding
- Matter-Certified PKI services offered by Kudelski IoT
- Matter DAC Authentication based on ECDSA NIST P256
- Common Criteria EAL6+ (high) certified hardware
- Cryptography support:
(Up to) ECC-512, RSA-2k, AES-256, SHA256
- I2C serial communication
- USON10-2/4 package (3x3mm)
- Extended temperature range available for consumer electronics and industrial applications
- Public Software Framework on Github
- Full turnkey solution incl. drivers/SW library/certificate(s) & key pair(s) implementation



Product details



Sales codes	SLS32AIA010MM (standard temperature range)
Application	Matter Nodes and Hubs
Memory	Up to 10kB user memory
Cryptography	ECC-256/RSA-2k/AES-256
Availability	Jan 2024
Temperature	-25 +85°C
Interface	I2C
Package	USON-10
Size	3 x 3 mm

OPTIGA™ Trust M is available with different services

OPTIGA™ Trust M
Provisioned by OEM



OPTIGA™ Trust M Express
Pre-provisioned by Infineon



OPTIGA™ Trust M MTR
Provisioned with Matter certificates



OPTIGA™ Trust M Fit
Custom provisioning



The benefits of OPTIGA™ Trust M MTR

- ✓ Easy to add Matter compatibility
- ✓ Works with any MCU/MPU
- ✓ Allows keeping your existing designs
- ✓ Personalized DAC for download
- ✓ High flexibility
- ✓ Allows creation of multiple variants
- ✓ Robust security
- ✓ NDA-free product documentation



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Evaluation samples and platforms

Sample Formfactor

OPTIGA™ Trust M MTR Shield

- mikroBUS™ Add-on Board
- SP006008195



Adapters

OPTIGA™ Trust Adapter

- Arduino Uno ↔ mikroBUS™
- SP006007975



Platform

PSoC62 Pioneer Kit

- PSoC6 with BT/WiFi
- CY8CKIT-062S2-43012
- SP005670449



OPTIGA™ Trust M MTR Engineering Samples

- 10 pcs in Tray
- SP006031931



MIKROE Pi 4 Click Shield

- Raspberry Pi ↔ MikroBUS™
- [Available externally](#)



Raspberry Pi 4B

- Linux Computer
- [Available externally](#)



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Key takeaways



OPTIGA™ Trust M MTR is easiest way to add secured Matter compatibility to your existing design

OPTIGA™ Trust M MTR is Matter-certified and works across different MCUs/MPUs

OPTIGA™ Trust M MTR offers a novel approach to device attestation: DACs can be assigned right up until the start of production

The pre-provisioned Secure Element certified to CC EAL 6+ offers a high level of protection

The easiest way to add Matter
and security to your smart home
devices

www.infineon.com/OPTIGA-Trust-M-MTR





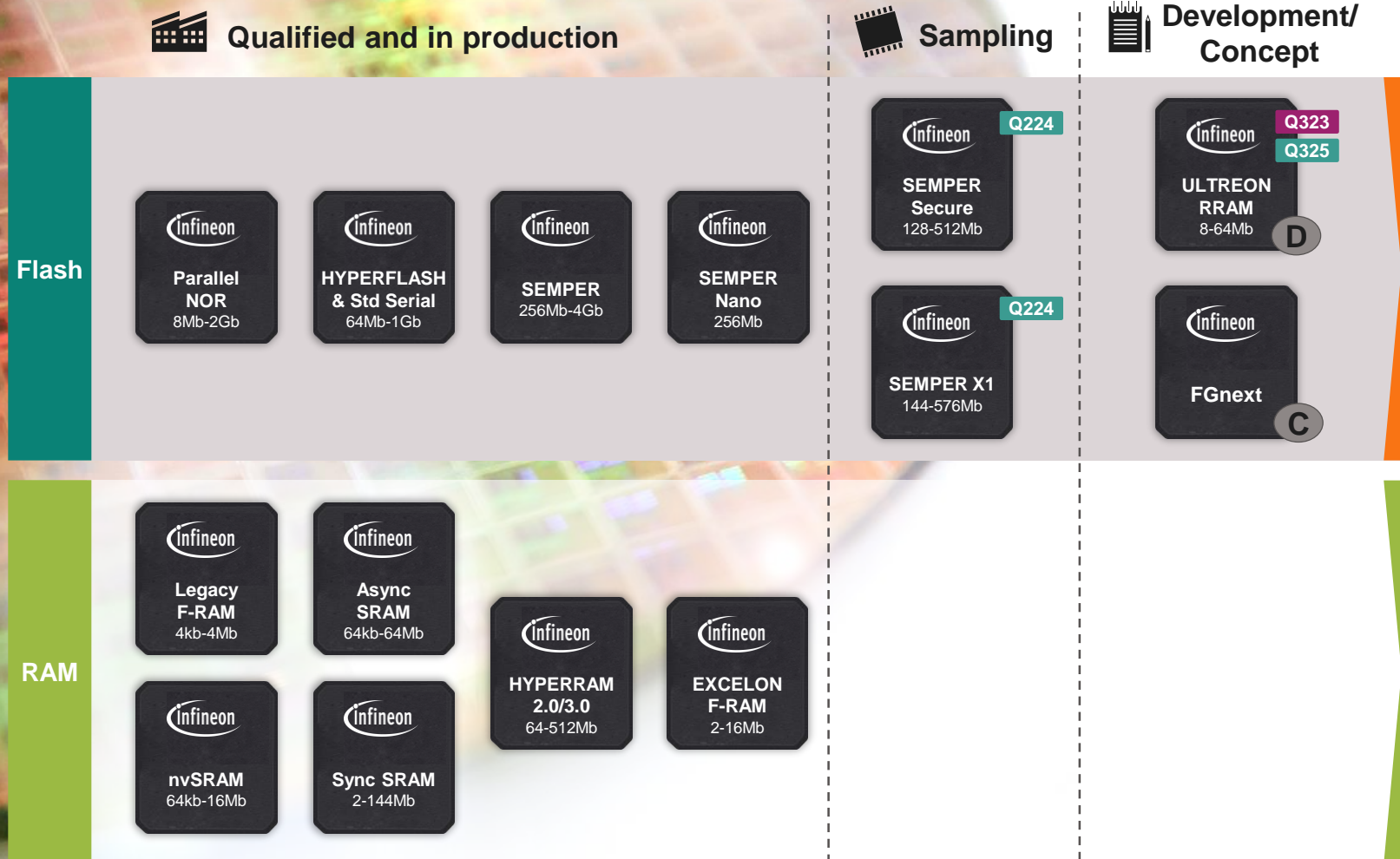


EBV SmartLock Slides Embedded World 2024



Investing in new technology and innovative solutions to address emerging new applications

ATV MS – Product & Technology Roadmap



Market News

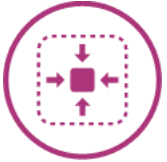


Infineon first to market with LPDDR Flash memory

Learn more [infineon.com/SEMPER-X1](https://www.infineon.com/SEMPER-X1)

(C) = Concept (D) = Development

Introducing SEMPER™ Nano NOR Flash memory



Compact

Extremely small 256Mb NOR Flash

- › Compact footprint: smallest die size in the market
- › Available in KGW, CSP, BGA



Low power

Best-in-class low-power design

- › Lowest standby and deep power down currents
- › Low active read current



Reliable

Enhanced reliability

- › Built-in Error Correction Code (SECDED)
- › Configurable sector architecture for code and data storage



SEMPER™ Nano Flash low power

**54%
LOWER**

Standby current

5 μ A standby current

**23%
LOWER**

Deep power down current

1 μ A deep-power-down current

**42%
LOWER**

Program current

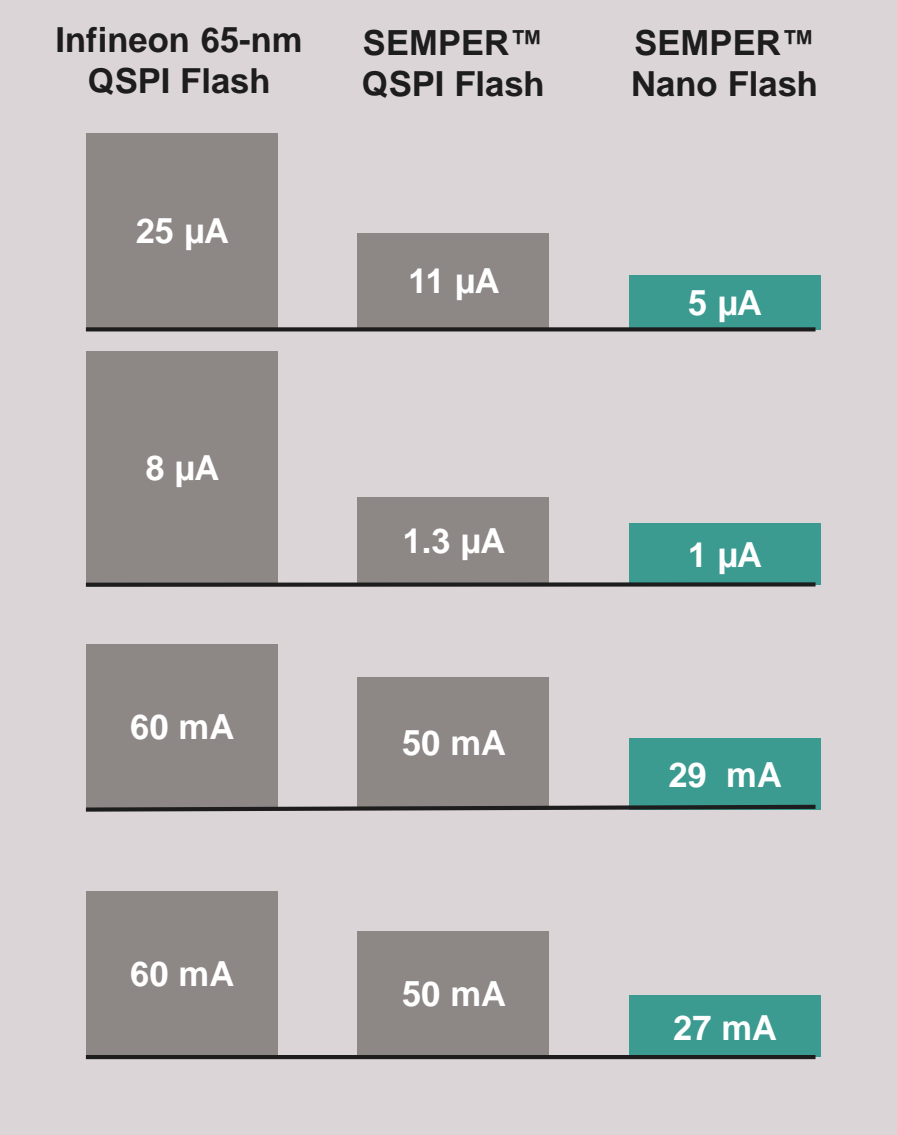
29 mA program current

**46%
LOWER**

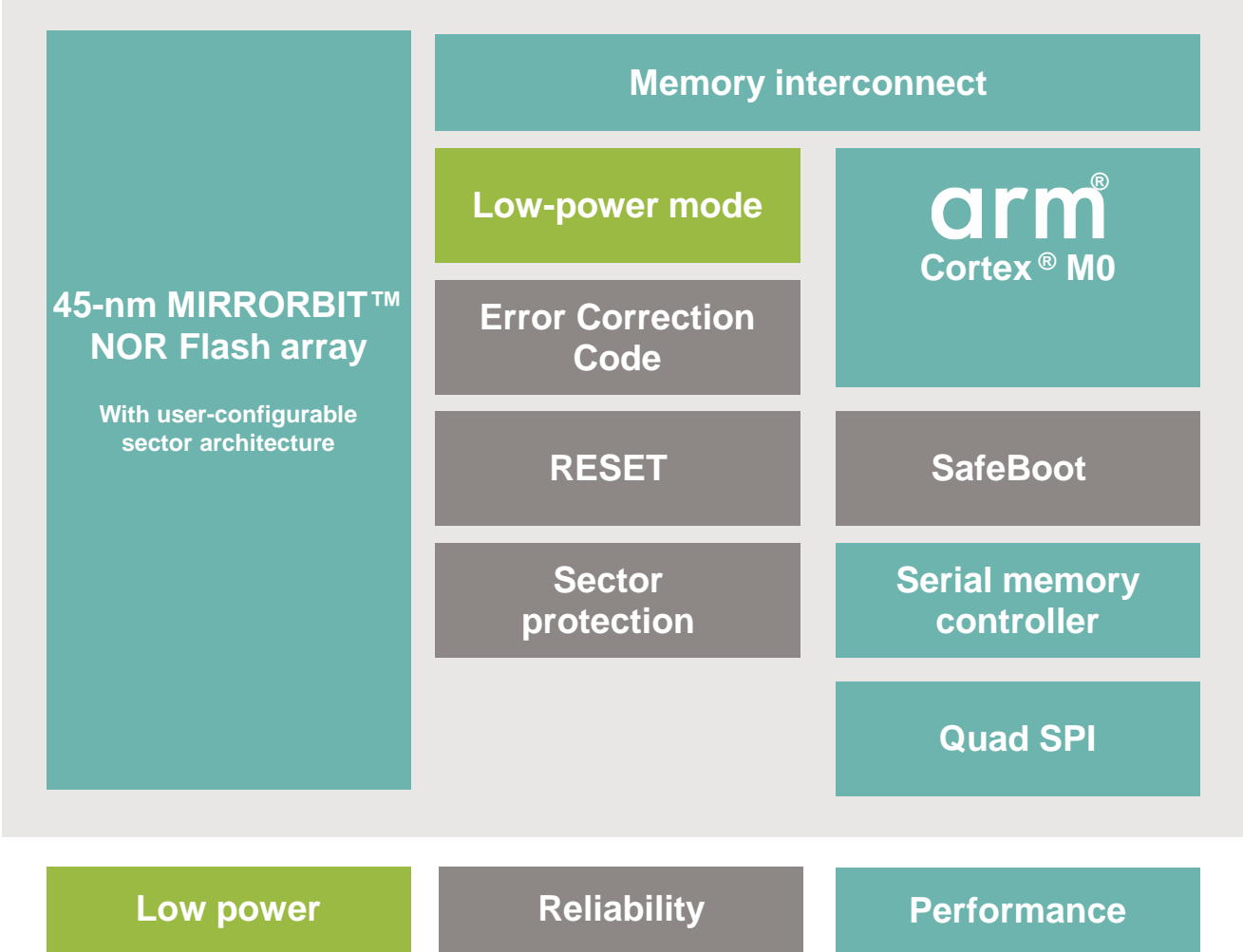
Erase current

27 mA erase current

Improves user experience by extending battery life



SEMPER™ Nano: built on proven SEMPER™ Flash architecture



Density
256Mbit

Voltage
1.8V

Performance
QSPI: 40 MB/s

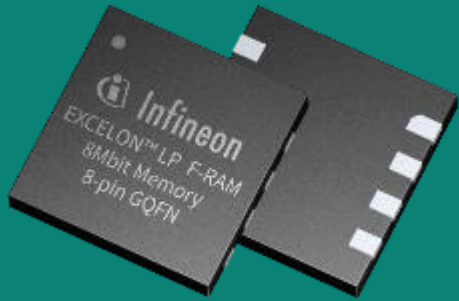
Reliability
100k-cycle endurance
25-year data retention

Package & Temp
KGW, WLCSP, BGA
-40 °C to 85 °C



What does a data-logging RAM do?

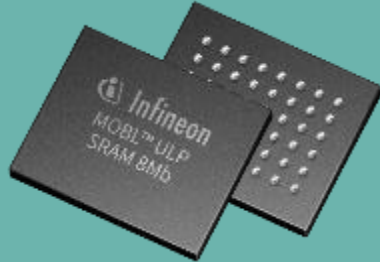
Infineon has three different data-logging RAM solutions for the automotive market



F-RAM



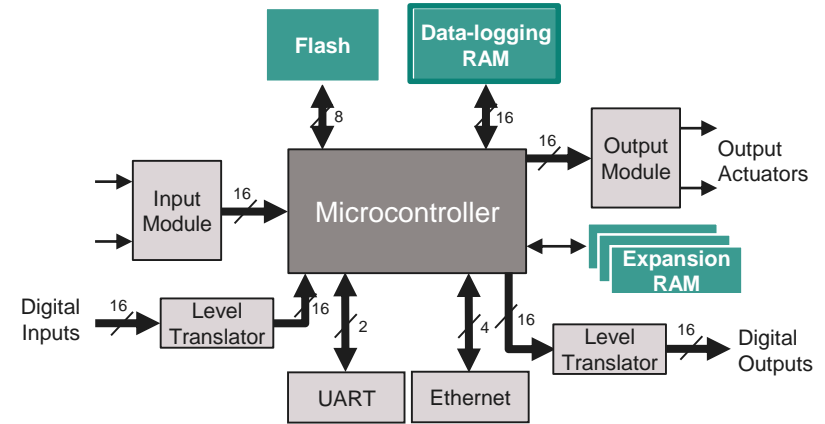
nvSRAM



Battery-backed MoBL™ SRAM



Block diagram of an embedded system



Data-logging RAM value proposition

- Stores configuration and changing state data
- Instantly captures data on power loss
- Provides unlimited write cycles for real-time, continuous logging
- Supports long data retention, even in harsh operating environments
- Offers AEC-Q100 qualified memories for automotive systems



Infineon value proposition – data logging

Data logging RAM

- Stores configuration and changing “state” data
- Instantly captures data on power loss
- Provides unlimited write cycles

F-RAM

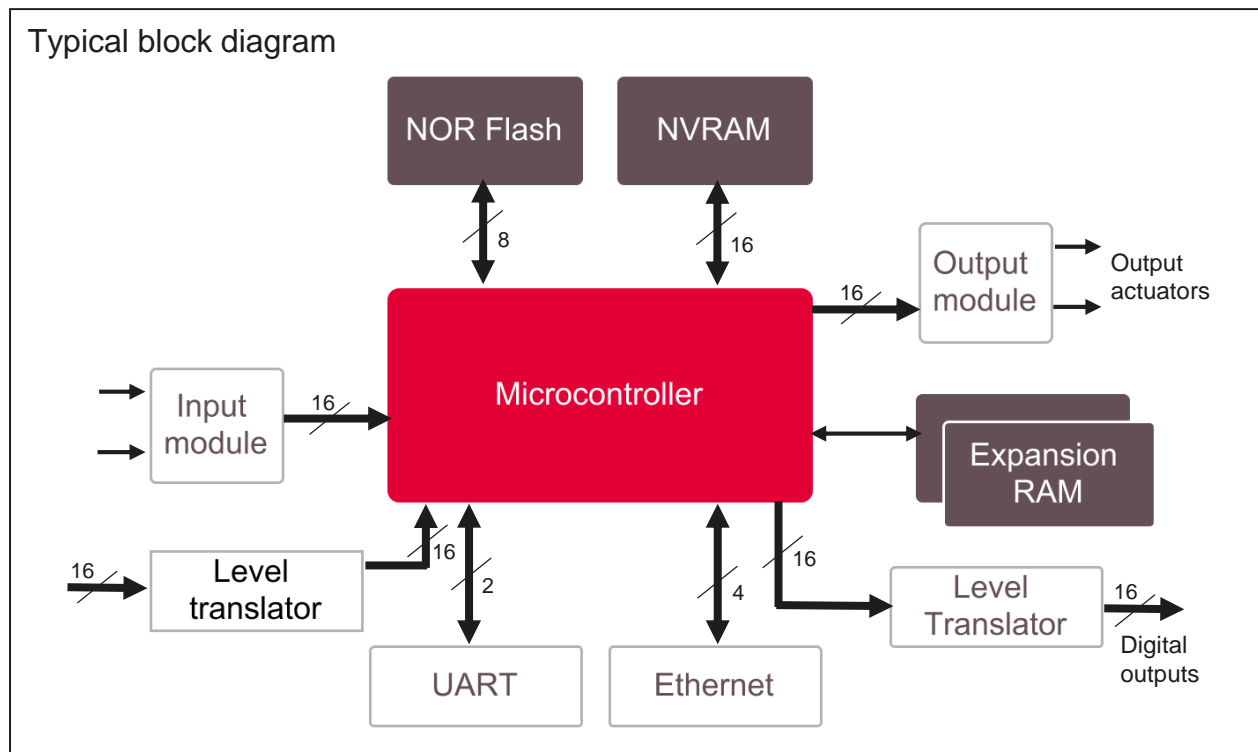
- Serial I/O applications
- Small footprint
- Very low power consumption

nvSRAM

- High-speed I/O
- Parallel I/O applications

MicroPower® SRAM with battery

- Medium-speed parallel I/O
- Depends on battery reliability



Server board controllers

Enterprise router / switch



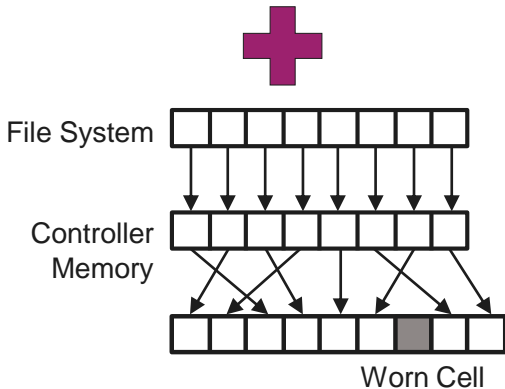
Baseband systems

Excelon™ F-RAM: Better Solution at a Lower Cost

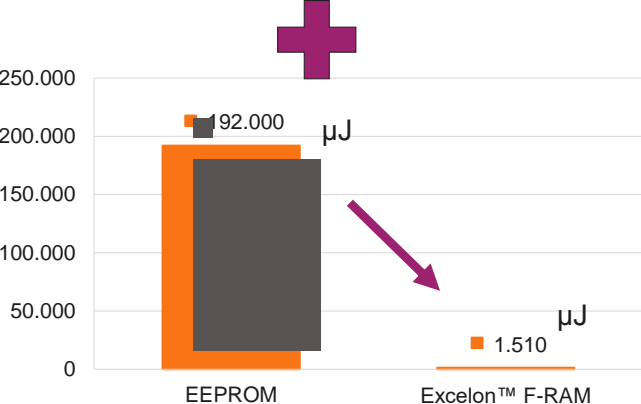
Simplify a conventional, complex, battery-operated, EEPROM-based design...



2x EEPROM capacity for wear leveling



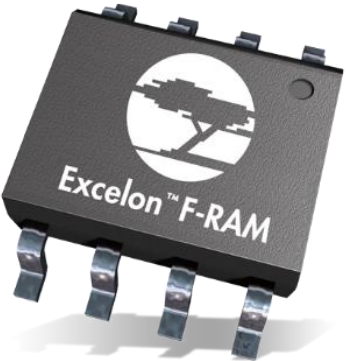
Wear leveling software algorithm to increase EEPROM write endurance



High-write energy consumption¹ compared with Excelon™ F-RAM

¹ Conditions: 4-Mb density, maximum current (0.6 mA for F-RAM, 3 mA for EEPROM), burst write at 5-MHz SPI, 2.7 to 3.6 V

By choosing F-RAM as your serial NVM solution...



F-RAM pin-for-pin replacement for EEPROM SOIC8

To produce better solutions for battery-operated applications at a lower cost.

Medical Devices

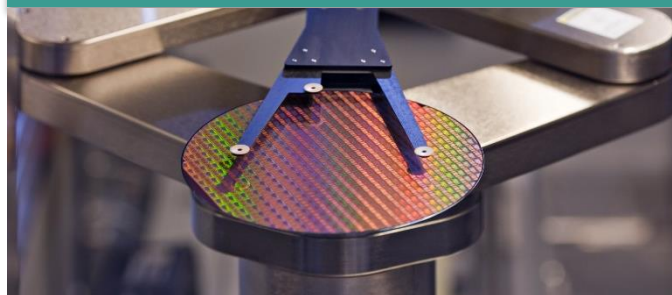


Wearables



Benefits of partnering with Infineon

Competence



- Industry's leading high-density NOR portfolio
- Proprietary MIRRORBIT™ and eCT technologies
- Products architected and designed for safety and security; embedded ARM core
- Reliability and quality leadership

Commitment



- Long-term commitment to NOR with investments in products and technology
- Zero-defect quality policy
- Longevity program for 10+ years product supply

Services



- Worldwide technical AE, FAE, marketing support
- Chipset enablement and ecosystem engagement
- Field quality engineering
- Joint qualifications

