

Application presentation
Smart thermostats

April 2026

Public

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6 Get started today! 92

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Application at a glance

Market

- Smart thermostat is used to manage the HVAC system, while increasing convenience, comfort and saving utility costs
- Global shipments of smart thermostats are expected to double in the next five years.

Application

- Programmable room thermostat
- Programmable radiator thermostat
- Smart thermostat
- Room sensor

Challenges

- Ultra-low power
- Wireless interoperability
- Consumer level HMI and reliability
- Secure OTA, HW/SW/data authentication, cybersecurity
- Reliable sensing the environment around
- Behavior prediction using ML
- Cloud-connected

Solution

- Low-power MCU, low-power Wi-Fi, low-power radar sensor
- Matter over Wi-Fi available, Matter over Thread in roadmap
- Industry‘s best CAPSENSE™ technology
- Best-in-class HW security – OPTIGA™ Trust M
- Comprehensive sensor portfolio - Radar, microphone
- ARM® Ethos-U55 core + NNLite in PSOC™ Edge for AI/ML
- AWS IoT core

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Infineon is a global leader in power systems and IoT

Global leader

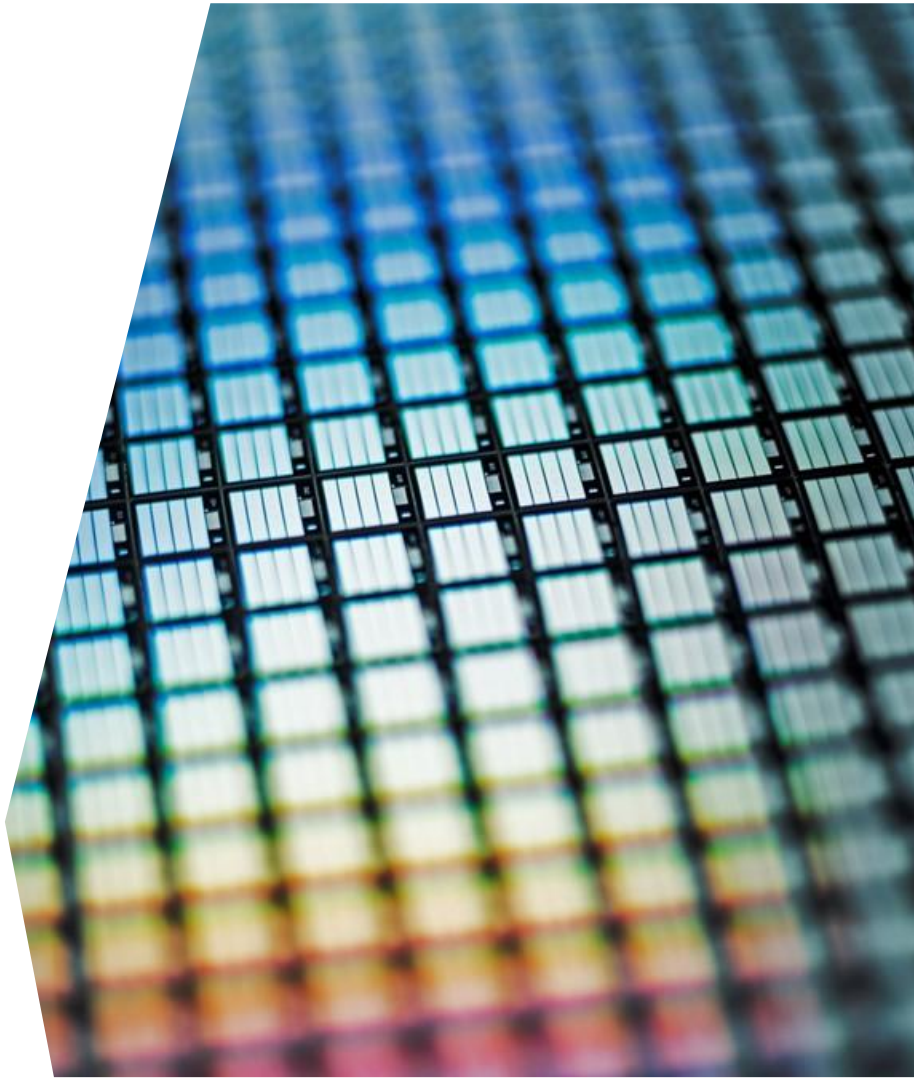
in automotive, power management,
energy efficient technologies and IoT

~57,000

employees[1]

Market position

Automotive	Power	Microcontroller
#1	**#1**	**#1**
TechInsights, March 2025	Omdia, October 2025	Omdia, November 2025



[1] As of 30 September 2025

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Infineon at a glance

Growth areas



Energy
green and efficient

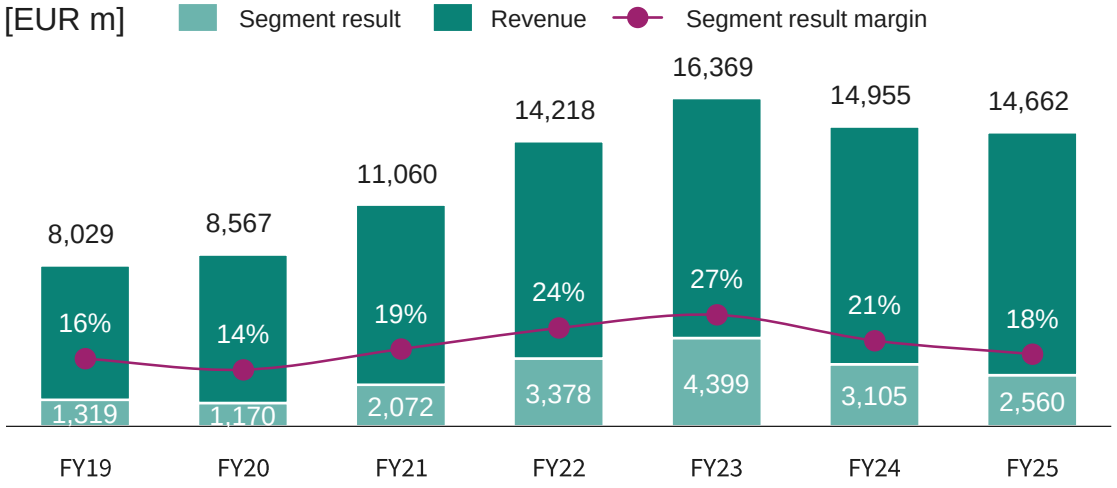


Mobility
clean and safe

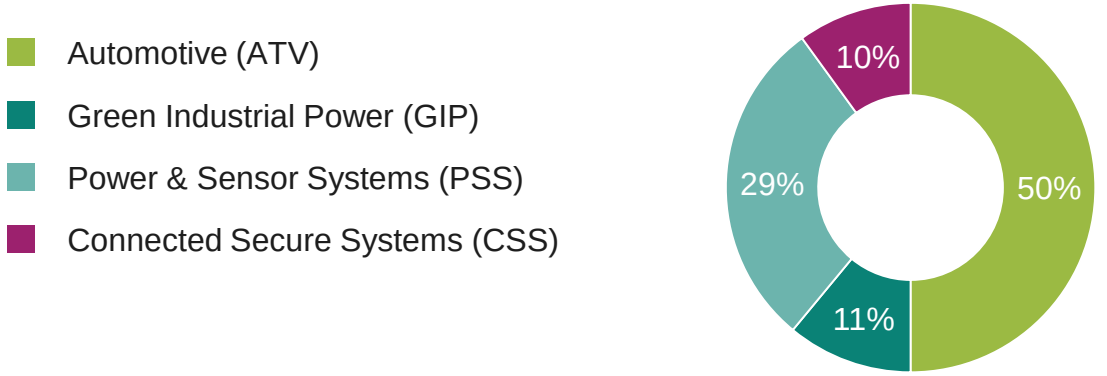


IoT
smart and secure

Financials



FY25 revenue by segment[1]

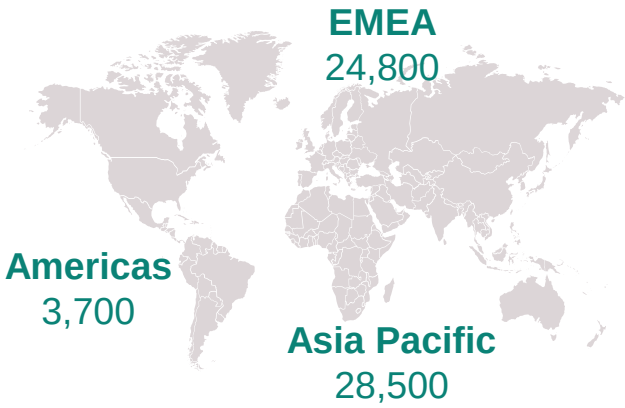


Employees[1]

57,000
employees worldwide

75
R&D and

14
manufacturing locations[2]



For further information: Infineon Annual Report.

[1] 2025 Fiscal year (as of 30 September 2025) | [2] As of 30 September 2025

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Infineon leader in IoT – driving digitalization by serving strongly growing multi-application markets

Consumer IoT



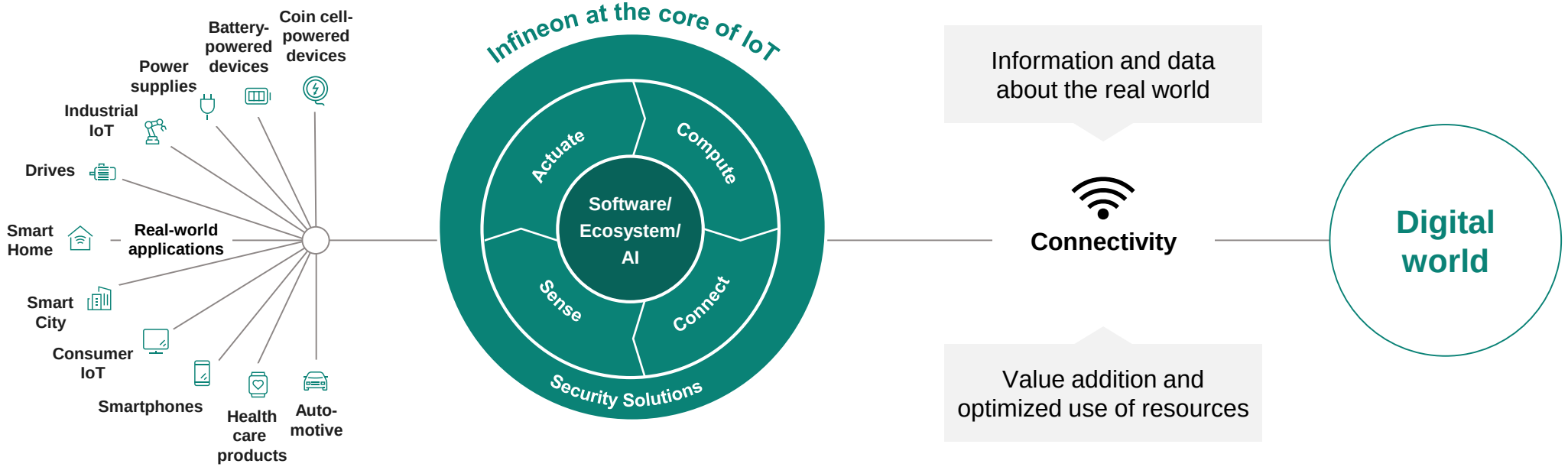
Industrial IoT



Automotive IoT



Products: MCU – Connectivity (Wi-Fi, BLE, NFC) – Sensors – Security – Power supply & switches



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Scope for Smart Thermostat Application

An automatic device for **regulating temperature** by controlling the supply of gas or electricity to a heating or cooling system, used in **Residential** or **Commercial** building associated with **sensors**.



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Product segments

Programmable Thermostat
($30-$80 retail)

Not connected

Simple display (segment LCD or LED)

Physical buttons or capacitive touch

Basic temperature and humidity sensing

Often battery-powered

Wi-Fi Thermostat
($70-$150 retail)

Wi-Fi connected

Segment or color display

Battery powered or AC powered with battery backup

Occupancy sensing is emerging trend.

Smart Thermostat
($80-$250 retail)

Connected to the cloud

Color LCD with touchscreen

MPU or high performance MCU, with ML capability

Smart Home ecosystem integration (Matter)

Radar for occupancy sensing

Air quality monitoring

Room Sensor
($20-$50 retail, per set)

Remote device enabling multiple zone control

Sensing of temperature, humidity, presence, air quality, noise

Wirelessly connected to the thermostat

Battery-powered

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Our understanding of application Smart Thermostat

Application requirements	Typical challenges
– Ultra low power micro-processor/controller with robust HMI support	• Heat generated inside causes inaccurate temperature measurement; fail in EnergyStar/LEED certification; poor user experience
– Ultra low power, high reliability Wi-Fi connectivity supporting interoperability	• Same challenges as above; Matter is becoming industry standard to integrate thermostat/sensors into smart home ecosystem.
– Secure OTA, cybersecurity, HW/SW/data authentication	• Connected thermostat has been hacked; privacy concerns; security requirements for Matter and CRA/RED.
– Reliable motion sensing, capable of advanced behavior recognition	• PIR is causing lots of false triggers, with most end user complaints; advanced sensing features are required by end users.
– AI/ML capability for sensor fusion, voice control, modeling for energy optimization	• Sensor fusion is needed when more sensors are integrated; AI/ML is needed for voice/gesture/behavior recognition; AI/ML modeling can improve energy efficiency.

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Infineon value proposition for application Smart Thermostat



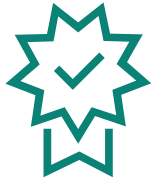
Reliable

- Industry's best capacitive touch technology – CapSense with highest SNR
- High sensitivity Wi-Fi/BLE/802.15.4 combo with range boost
- 60GHz Radar plus IFX software algorithms, for reliable presence sensing, people detection/counting, people/pet separation etc.
- High SNR digital or analog microphone



Low power

- Low power MCU system – high SNR CapSense; dual core PSOC 62 and PSOC Edge; M55 + U55 in PSOC Edge delivers high enery efficiency for AI/ML
- Low power Wi-Fi/BLE/802.15.4 combo – ultra low power CYW43022 and ACW741x; Stack offloading reduces system power; high sensitivity for logng range at low power.
- Low power 1T1R or 1T3R Radar



High performance

- High performance AI/ML in PSOC Edge
- High SNR for CapSense – the 5th gen capacitive touch
- OPTIGA Trust M – high performance turnkey cybersecurity solution
- High performance Wi-Fi 6/7 – with range enhancement and security support
- Low power Wi-Fi MCU for single chip design
- High performance Radar sensing – wide FOV, high resolution for micro/macro movement sensing

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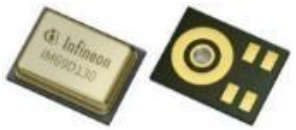
Infineon offering for application Smart Thermostat





Sensing

- Radar ICs
- Environmental Sensor
- MEMS microphones
- Pressure Sensor



Connectivity

- Wi-Fi + Bluetooth+ 802.15.4 combos
- BT + BLE modules
- NFC
- LNA, RF switches



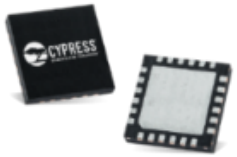
MCU

- PSOC™ Edge
- PSOC™ 6
- PSOC™ 4



Capacitive touch

- Capacitive touch controller



Security

- IoT security



Power

- SMPS
- ESD protection
- MOSFET
- SSR



Memory

- Serial NOR flash
- EXCELONTM F-RAM
- HYPERRAM™ PSRAM



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Application block diagram

Microcontrollers & HMI

- PSOC™ Edge
- PSOC™ 4
- PSOC™ 6

Connectivity

(Matter over) Wi-Fi + Bluetooth LE + 802.15.4

- CYW43439 (1x1 11n)
- CYW4373 (1x1 11ac DB)
- CYW43012/22 (ULP 1x1 11n DB)
- CYW5551x (1x1 11ax DB/TB)
- CYW5591x (1x1 11ax DB/TB) MCU
- CYW5557x (1x1 or 2x2 11ax DB/TB)
- ACW741x (1x1 Wi-Fi 7 DB/TB)

Bluetooth® + BLE

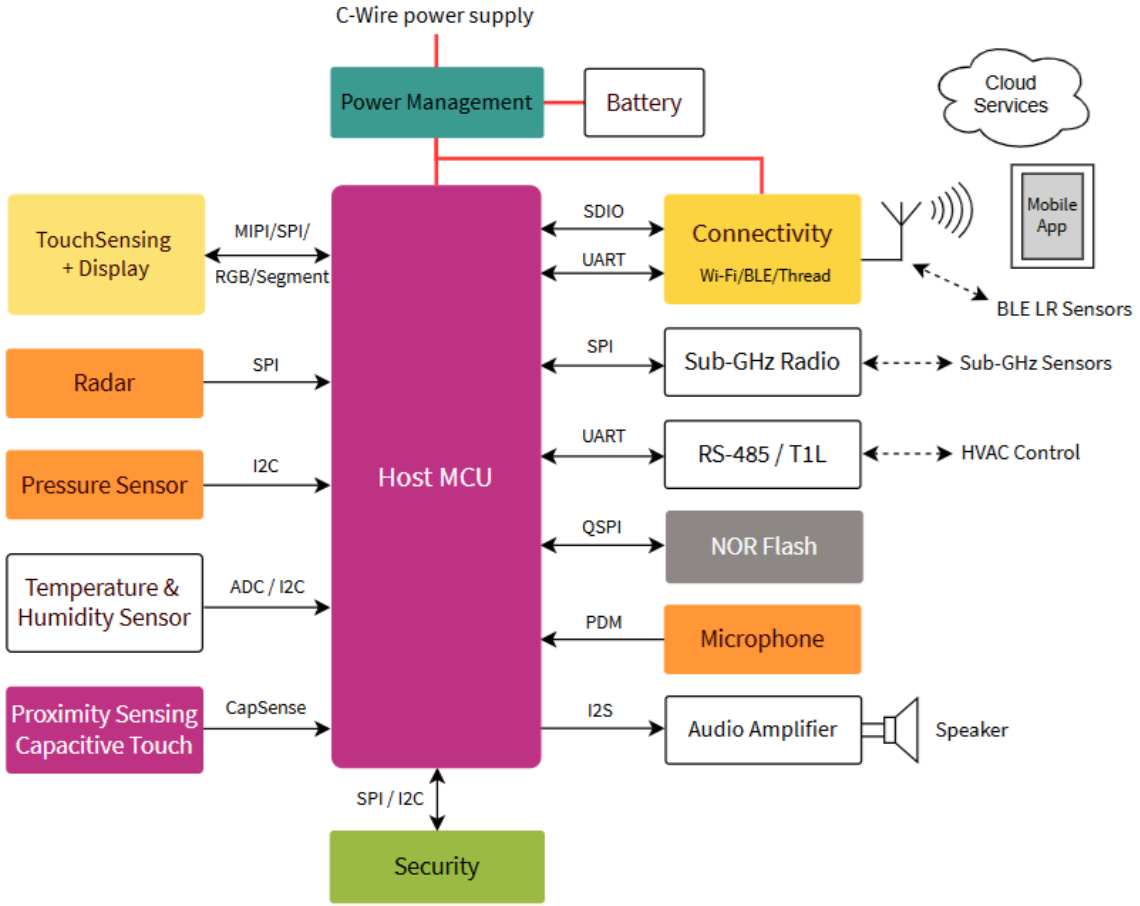
- CYW20829
- PSOC™ 4 BLE
- PSOC™ 6 BLE

Matter over Thread

- CYW30739 module

NFC

- OPTIGA Authenticate NBT



Memories

Serial NOR flash

EXCELON™ F-RAM

HYPERRAM™ PSRAM

IoT Security

- OPTIGA™ Trust M
  - M5271SLS32AIA010MK / ML
- OPTIGA™ Trust M MTR (Matter)
  - SLS32AIA010MMUSON10XTMA2

Sensors

Radar IC (60 GHz)

- BGT60LTR11(S)AIP
- BGT60UTR11AIP
- BGT60TR13C
- BGT60CUTR13

MEMS microphones

- IM69D130, IM69D120

Pressure sensors

- DPS310, DPS368

Power

MOSFET

- IRL100HS121

ESD Protection

- ESD245, ESD111
- ESD101-B1-02ELS

AC-DC Flyback Controller

- ICE5AR4770BZS

Solid State Isolators

- iSSI20R03H

Schottky diodes

- BAS7002L, BAS7004, BAS4002L

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Microcontroller Portfolio Overview

	32-bit Arm® Cortex® **M0/M0+/M23** (32–384KB Flash)	32-bit Arm® Cortex® **M4/M0+** (128KB–2MB Flash)	32-bit Arm® Cortex® **M33** (512KB–4MB RRAM/Flash)	32-bit Arm® Cortex® **M55/M7**
IoT/Consumer MCUs	PSOC 4000/T PSOC 4100/S/T PSOC 4200 PSOC 4700/S **Flexible PSOC™ 4 MCUs** with analog sensor integration, CAPSENSE™ capacitive touch, inductive sensing, wired and wireless connectivity such as USB, CAN, and BLE	PSOC 61 PSOC 62 PSOC 64 **Ultra-low power PSOC™ 6 MCUs** with M4/M0+ dual-core and EPC security, ideal for battery powered applications **Secured PSOC™ 6 MCU** with PSA L2/EPC2 certification		PSOC Edge E81 PSOC Edge E83 PSOC Edge E84 **High Performance Cortex-M55** **Low Power Cortex-M33** **Helium DSP** **NPU for AI/ML acceleration** **GPU for Graphic engine** **Up to 9.5 MB SRAM, 4 MB RRAM**
Industrial MCUs	XMC 1100 XMC 1200 XMC 1300 XMC 1400 **XMC™ 1000 entry-level MCUs** for industrial applications like power tools, LED lightning, eBike and fan motor control	XMC 4100/4200 XMC 4300/4400 XMC 4500 XMC 4700/4800 **XMC™ 4000 MCUs** with built-in DSP instruction set, designed particularly for digital power conversion, motor control, sense & control, and IO applications **XMC™ 4300 and 4800** with integrated EtherCAT®	PSOC Control **Next-gen Industrial MCUs**	XMC 7100 XMC 7200 **XMC™ 7000 low-power MCUs** with single- or dual-core M7 are built on 40-nm process technology addressing high-end industrial applications

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Infineon IoT Compute & Wireless (ICW)
PSOC™ 4 Portfolio – Entry-level MCUs with superior HMI capabilities

PSOC™ 4	**32-bit Arm® Cortex® M0/M0+** 16-48MHz 16KB/2KB < **Flash/SRAM Capacity** > 384KB/32KB	
PSOC™ 4700 **Sense Anything**	PSOC 4700	**3rd Gen Inductive and capacitive sensing** USB 2.0, CAN
PSOC™ 4500 **Motor & Power Control**	PSOC 4500S	**Divide and square-root compute accelerators**
PSOC™ 4200 **Programmable Digital**	PSOC 4200, PSOC 4200DS, PSOC 4200M, PSOC 4200L, PSOC 4200BL	**Intelligent analog features programmable digital blocks** USB 2.0, CAN 4200BL: On-chip Bluetooth® LE
PSOC™ 4100 **Intelligent Analog**	PSOC 4100, PSOC 4100S, PSOC 4100M, PSOC 4100BL, PSOC 4100S Plus, PSOC 4100S Max, PSOC 4100PS, PSOC 4100T Plus (MP: Q225)	**Entry-level features plus programmable analog blocks** Up to 1-Msps ADC 4100S Max and 4100T Plus : 5th gen CAPSENSE™ with Multi-Sense IP, enabled for Inductive & Liquid sensing 4100BL: On-chip Bluetooth® LE
PSOC™ 4000 **Entry-level**	PSOC 4000, PSOC 4000S, PSOC 4000T	**Entry-level family with CAPSENSE™** 4000T: 5th gen CAPSENSE™ with Multi-Sense, supporting capacitive and inductive sensing

Capacitive Sensing (self) | + Capacitive Sensing (mutual) | + Inductive & Liquid Sensing

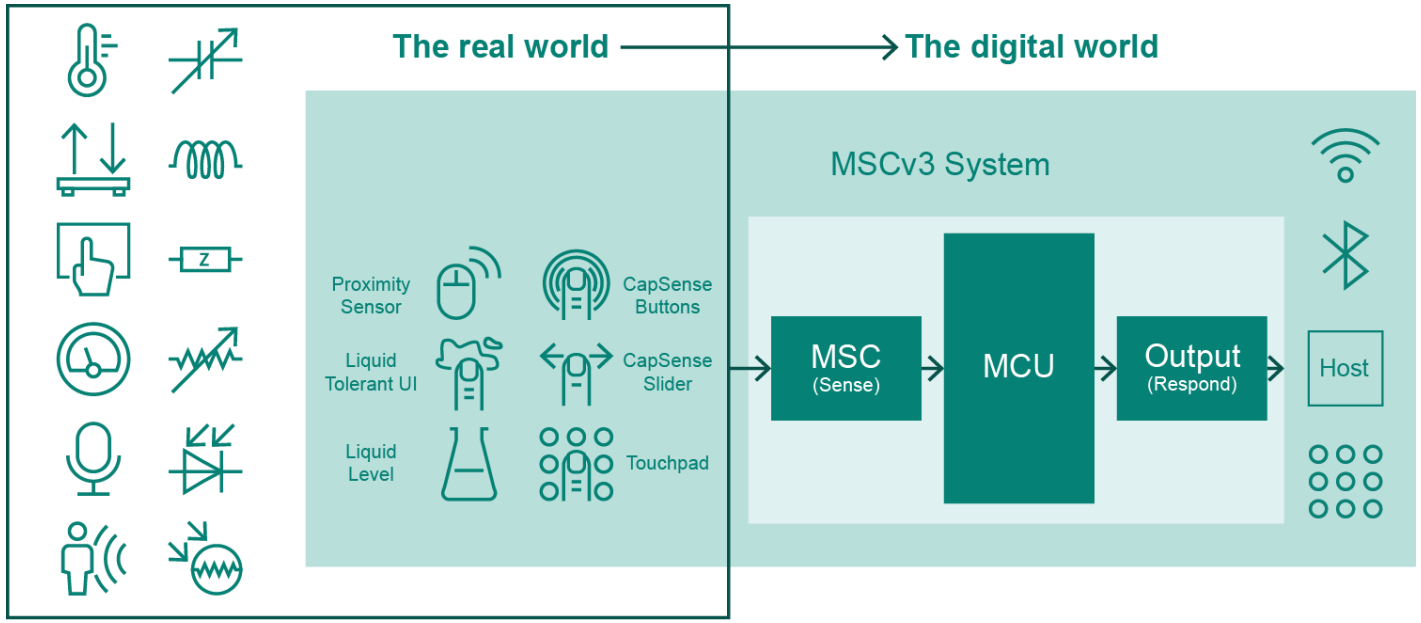
ModusToolbox™ – Easy-to-use software and tools enabling rapid development of PSOC™, covering applications from embedded sense and control to wireless and cloud-connected systems

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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



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PSOC™ 4000T

Applications

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

Features

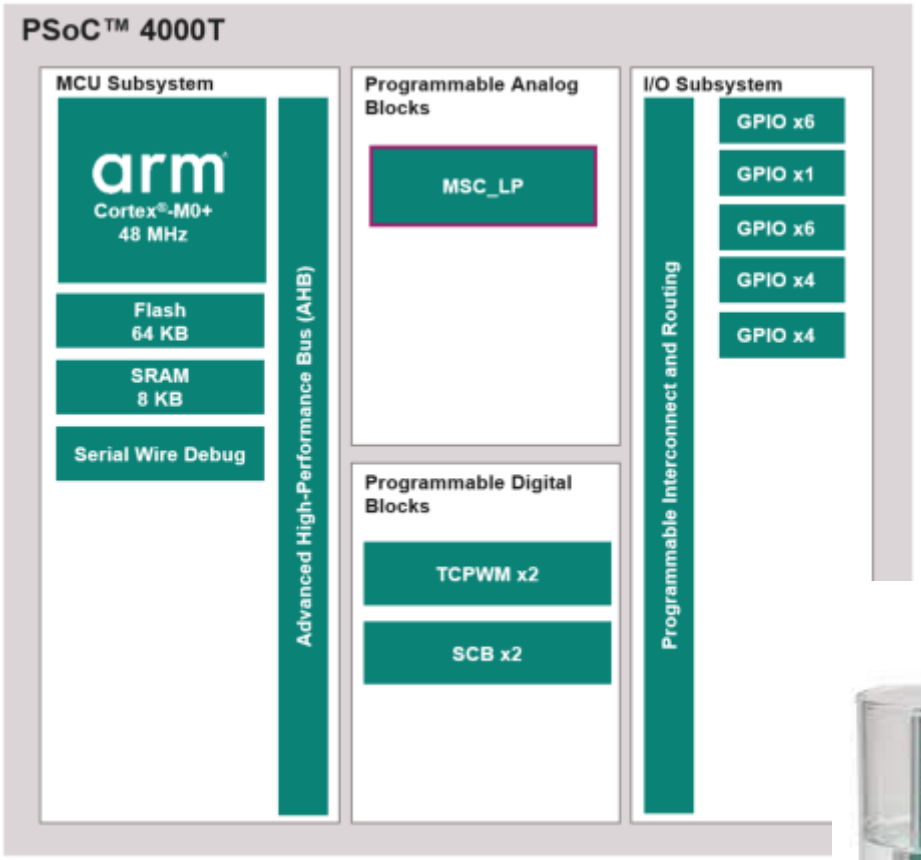
32-bit MCU Subsystem
- 48-MHz Arm® Cortex®-M0+ CPU
- 64 KB flash and 8 KB SRAM

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 I^2C, SPI, or UART

I/O Subsystem
- Up to 21 GPIOs, including 16 sensors

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





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Benefits of Using CAPSENSE™

Durability and Longevity	Devices with CAPSENSE™ don't have physical components that can **wear out or break**, resulting in a longer lifespan.
	Devices with CAPSENSE™ are less susceptible to **dust, dirt, moisture, and other environmental contaminants** that can interfere with the operation of mechanical buttons.
Enhanced User Experience	Devices with CAPSENSE™ offer a **modern aesthetic**, enhancing the overall user experience.
	CAPSENSE™ supports linear and radial **sliders** in addition to buttons, as well as **proximity sensing**.
	The smooth, seamless surface of device front cover with CAPSENSE™ makes them easy to **clean and maintain**.
Lower cost	Button interface with CAPSENSE™ is $0.40-0.70 **cheaper**.

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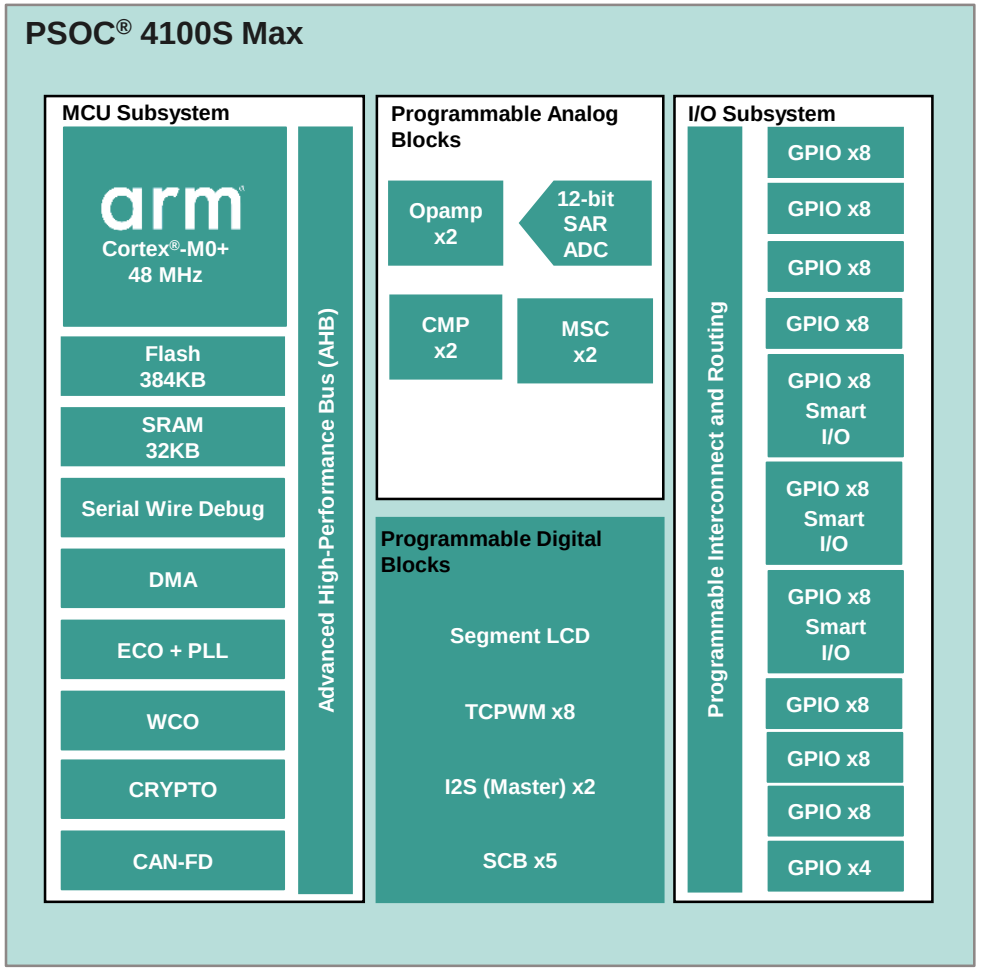
PSOC™ 4100S Max

Application

Main control and user interface for home appliance, consumer, and industrial applications

Features

- **32-bit MCU Subsystem**
  - 48-MHz Arm® Cortex®-M0+ CPU with a DMA controller
  - 384KB flash and 32KB SRAM
  - External MHz oscillator (ECO) with PLL and 32-kHz watch crystal oscillator (WCO)
  - CRYPTO block include AES, TRNG, PRNG, CRC and SHA
- **Programmable Analog Blocks**
  - One 12-bit, 1-Msps SAR ADC
  - Two opamps configurable as programmable gain amplifiers (PGAs), comparators (CMPs), etc.
  - Two low-power comparators
  - Two MSC (Multi-Sense Convertor) blocks for next-generation CapSense® technology
- **Programmable Digital Blocks**
  - Eight 16-bit timer/counter/pulse-width modulator (TCPWM) blocks
  - Five serial communication blocks (SCBs) that are configurable as I²C, SPI, or UART
  - Segment LCD
  - Two I2S Master channels
- **One CAN-FD (Controller Area Network with Flexible Data-rate) Controller**
- **Packages**
  - 48-TQFP, 64-TQFP and 100-TQFP
- **I/O Subsystem**
  - Up to 84 GPIOs, including 24 Smart I/Os[1]



Collateral

Datasheet: Contact Sales

Availability

Sampling: NOW
Production: NOW

[1] Embedded programmable digital logic in the I/O subsystem

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Infineon IoT Compute & Wireless (ICW)
PSOC™ 6 Portfolio – Purpose-built Microcontrollers for the IoT

PSOC™ 6	**32-bit Arm® Cortex® M4/M0+/M33** 50-150MHz 256/128KB < **Flash/SRAM Capacity** > 2048/1024KB	
PSOC™ 63 **Bluetooth® LE**	PSOC 6346, PSOC 6347	**Bluetooth® Low Energy MCUs** Dual-Core 150/100MHz M4/M0+ BLE stack supporting BT5.4
PSOC™ 62 **High Performance**	PSOC 6244, PSOC 6245, PSOC 6246, PSOC 6247, PSOC 6248, PSOC 624A	**High Performance MCUs** Dual-Core 150/100MHz M4/M0+ Low-power Flash
PSOC™ 61 **Entry-level**	PSOC 6144, PSOC 6145, PSOC 6146, PSOC 6147, PSOC 6148, PSOC 614A	**M4 Entry-level MCUs** Single-Core 50-150MHz M4 Low-power Flash

ModusToolbox™ – Easy-to-use software and tools enabling rapid development of PSOC™, covering applications from embedded sense and control to wireless and cloud-connected systems

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PSOC™ 6: Dual-core architecture, ideal for thermostat design

- Most flexible, high-performance, dual-core architecture designed specifically for the IoT
  - Optimize for system power consumption and performance
  - CPU core selection based on application needs
  - Inter-processor communication (IPC) enables the CPUs to communicate and synchronize activities
  - Dynamic voltage/frequency scaling with low power (LP) (0.9 V & 50 MHz) and ultra low power (ULP) (1.1V & 150 MHz) operating modes

Example application mapping between CPU

Cortex®-M4 Usage examples:

RTOS

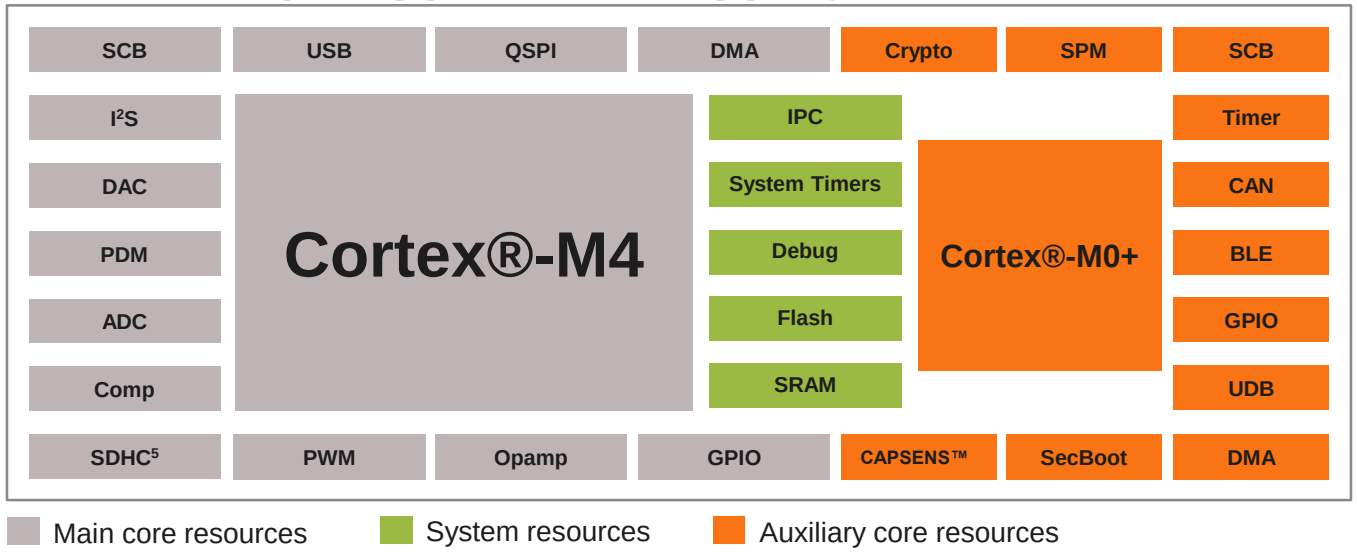
Wi-Fi stack

Displays

Sensor analytics

Audio interface

USB/BLE HCI



Cortex®-M0+ Usage examples:

BLE controller

CAPSENSE™

Secure functions

I/O data control

Sensor aggregation

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PSOC™ 62 Line - Specification

NDA only

Applications

IoT gateways, smart home, home appliances, HMI, audio processing, and industrial concentrators

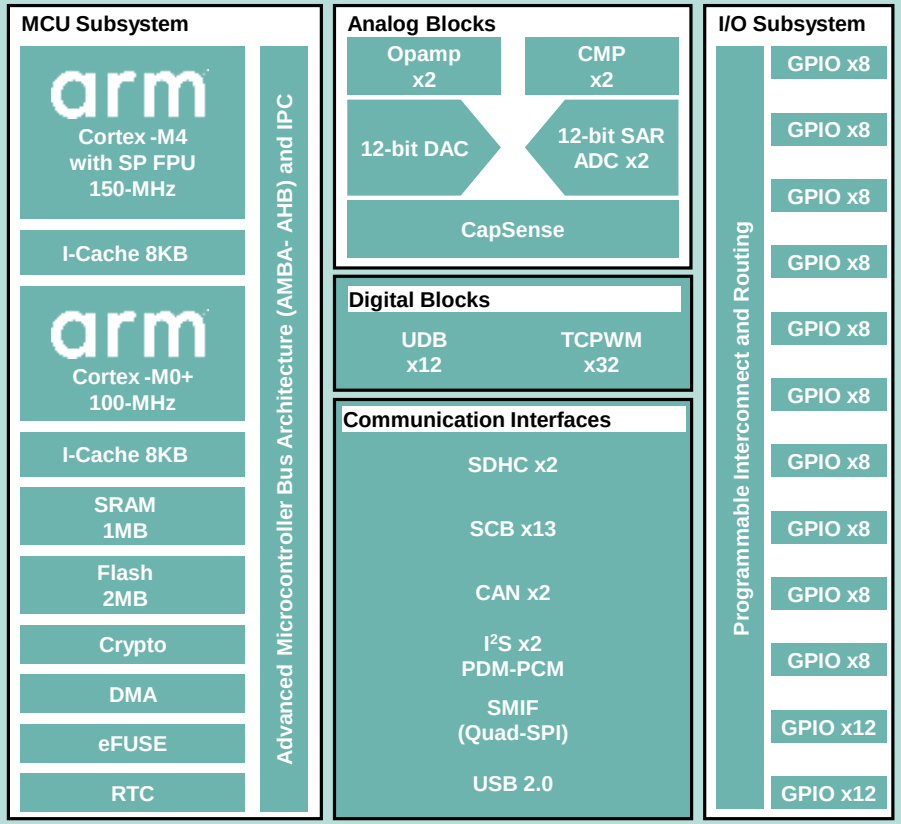
Features

- **MCU Subsystem**
  - Dual-core architecture: 150-MHz Arm® Cortex®-M4 and 100-MHz Arm Cortex-M0+
  - Ultra-low-power (0.9 V) and low-power (1.1 V) operation mode
  - Up to 2MB Flash, 1MB SRAM with DMA
- **Analog Blocks**
- **2 x opamps, 2 x low-power comparators (CMP), 2x 12-bit SAR ADC (1 Msps)**
  - 12-bit DAC, CapSense® capacitive-sensing block
- **Digital Blocks and Communication Interfaces**
  - 12 x universal digital blocks (UDBs): custom digital peripherals
  - 24 x 16-bit and 8 x 32-bit timer/counter/pulse-width modulation blocks (TCPWM)1
  - 12 x serial communication blocks (SCBs), deep-sleep SCB
  - 2 x I2S and PDM-PCM converter, SMIF, 2 x CAN
  - 2 x SDHC blocks
  - USB 2.0 (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 104 GPIOs**
- **Packages: 124-BGA, 100-WLCSP, 128-TQFP, 100-TQFP, 80-TQFP, 80-WLCSP, 68-QFN, 64-TQFP, 49-WLCSP**

Collateral

Datasheet: PSOC 6 Product Page

PSOC® 6200



Availability

Sampling: Now **Production**: Now

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PSOC™ Edge – Portfolio of Edge AI enabled Microcontrollers delivering energy efficient consumer and industrial applications -**LAUNCHED**

High-Performance, Low-Power Architecture

Cortex-M55 with Helium DSP on-demand domain - up to 400MHz
Cortex-M33 always-on low-power domain - up to 200MHz

Energy Efficient Edge AI

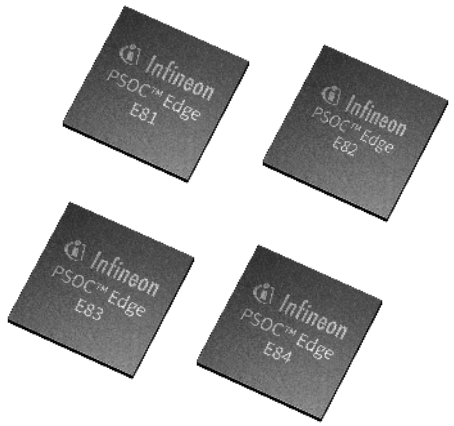
Ethos-U55 NPU – up to 400 MHz
Infineon's NNLite NPU – up to 200 MHz
Enabled by DEEPCRAFT™ AI Suite

State-of-the-Art Security

Secured Enclave
Infineon EPC4 with PSA Certified L3/L4 iSE
Edge-Protect Bootloader and TF-M stack

Multi-Modal, Advanced HMI

Voice, Natural Language & Generative AI
Accelerated multi-microphone audio
Vision-based awareness & interaction
Low-Power Graphics with 2.5D GPU – up to 400MHz



Scalable and Compatible Portfolio

Easy to Use Software & Tools

ModusToolbox™
(code examples, middleware, device drivers, project creation, library management, & configuration)

DEEPCRAFT™ AI Suite
Studio, AI Hub, Solutions & More



Development Kits for easy prototyping

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PSOC™ Edge E8 Series



Next Generation of Secure, Energy-Efficient Edge AI MCU

AI ENGINES

- Arm® Ethos-Ux5 NPU Up to 400MHz
- Infineon's NNLite NPU Up to 200 MHz

Enabled by DEEPCRAFT™ AI Suite

HUMAN MACHINE INTERFACE

- 2.5D GPU Up to 400MHz
- MIPI-DSI/DBI
- MIPI-CSI/DVP
- 6x PDM/PCM (1xLP)
- 2x TDM/I2S

Low Power Voice, Audio, Graphics & Vision

COMMUNICATION

- 10/100 Ethernet
- 2x CAN-FD
- USB HS/FS
- 1x I3C
- 12 x SCB (UART, I^2C, SPI)

High-Speed, Multi-Protocol Connectivity

High-Performance and Low Power Compute

- Arm® Cortex®-M55 Up to 400 MHz
- Arm® Cortex®-M33 Up to 200 MHz
- ARM® Trustzone®

SECURED ENCLAVE

- Secure Boot
- Active/Passive Tamper
- Crypto Accelerator
- Secure Key Storage

Certified PSA L4

Software solutions including Edge Protect Bootloader, Arm© TF-M , mbedTLS, and more

MEMORY

- Up to 6.5 MB on chip SRAM
- Up to 64 MB DCDRAM
- Serial Memory I/F
- Up to 4MB RRAM

ANALOG

- 12-20bit ADC (5 MSPS)
- OpAmp / PGA
- 12bit DAC
- Comparators

SYSTEM CONTROL

- Clocks
- Timers (PWM, Watchdog, RTC)
- Power Management (LDO/Buck)

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PSOC™ Edge E8 MCU Family

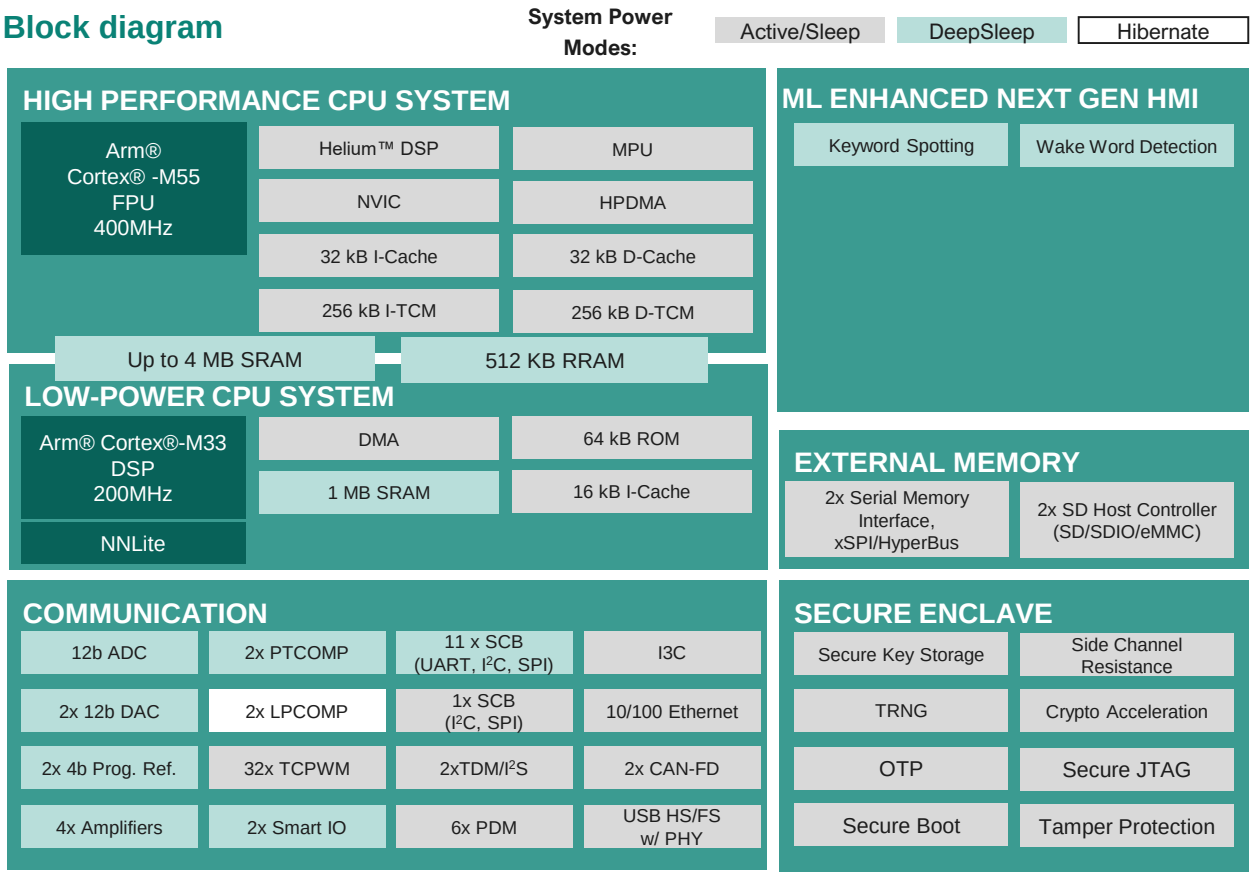
	PSOC™ Edge E81 Base	PSOC™ Edge E82 Base + GFX	PSOC™ Edge E83 Base + NPU + Vision	PSOC™ Edge E84 Base + NPU + Vision + GFX
Processor	Cortex-M55 + DSP Cortex-M33	Cortex-M55 + DSP Cortex-M33	Cortex-M55 + DSP Cortex-M33	Cortex-M55 + DSP Cortex-M33
Machine Learning	DSP NN accelerator, NNLite	DSP NN accelerator, NNLite	DSP NN accelerator, NNLite, U55-128	DSP NN accelerator, NNLite, U55-128
SRAM	Up to 4 MB (System RAM) Up to 1 MB (Low-Power Domain)	Up to 4 MB (System RAM) Up to 1 MB (Low-Power Domain)	Up to 4 MB (System RAM) Up to 1 MB (Low-Power Domain)	Up to 5 MB (System RAM) Up to 1 MB (Low-Power Domain)
RRAM / NVM	512 kB	512 kB	512 kB	512 kB
External Memory	2x SMIF, 2x SD Host Controller	2x SMIF, 2x SD Host Controller	2x SMIF, 2x SD Host Controller	2x SMIF, 2x SD Host Controller
Audio/Voice	ULP Always ON prog. analog for voice, audio, sensing 4x Analog Mic, 6x Digital Mic Acoustic Activity Detection & NNLite Wake Word	ULP Always ON prog. analog for voice, audio, sensing 4x Analog Mic, 6x Digital Mic Acoustic Activity Detection & NNLite Wake Word	ULP Always ON prog. analog for voice, audio, sensing 4x Analog Mic, 6x Digital Mic Acoustic Activity Detection & U55 ML-based Wake Word & Full Voice Inferencing	ULP Always ON prog. analog for voice, audio, sensing 4x Analog Mic, 6x Digital Mic Acoustic Activity Detection & U55 ML-based Wake Word & Full Voice Inferencing
Graphics	No	LP 2.5D GPU Up to 1024 x 768, MIPI-DSI/DBI formats	No	LP 2.5D GPU Up to 1024 x 768, MIPI-DSI/DBI formats
Vision	No	No	Position Detection/Face Recognition/Object Detection (VGA) via USB	Position Detection/Face Recognition/Object Detection (VGA) via USB
Peripherals & IO	USB, 10/100 Ethernet, CAN, SPI, UART, I2C, I3C, I2S	USB, 10/100 Ethernet, CAN, SPI, UART, I2C, I3C, I2S	USB, 10/100 Ethernet, CAN, SPI, UART, I2C, I3C, I2S	USB, 10/100 Ethernet, CAN, SPI, UART, I2C, I3C, I2S
Security	Secured Enclave, Edge Protect Category 2 and 4	Secured Enclave, Edge Protect Category 2 and 4	Secured Enclave, Edge Protect Category 2 and 4	Secured Enclave, Edge Protect Category 2 and 4
Packages	BGA-220, 10x10, 0.65p WLB-154, 4.3x5.3, 0.35p	BGA-220, 10x10, 0.65p WLB-154, 4.3x5.3, 0.35p	BGA-220, 10x10, 0.65p WLB-154, 4.3x5.3, 0.35p	BGA-220, 10x10, 0.65p eWLB-235, 7x7, 0.4p WLB-154, 4.3x5.3, 0.35p
Availability	Samples – Q2-2025 Production – Q2-2025	Samples – Q2-2025 Production – Q2-2025	Samples – Q2-2025 Production – Q2-2025	Samples – Now Production – Q2-2025

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PSOC™ Edge E81

Next Generation, Low-Power MCU

Block diagram



Applications and Target Markets

- Smart Home, Appliances, Residential AC, Wearables, Industrial HMI, Smart Speakers, Point of Sale (POS), etc.

Product Highlights

- **High performance, real-time compute domain:**
  - Cortex®-M55 w FPU + Helium DSP
  - Up to 4 MB System SRAM, 256 KB I&D TCMs
- **Low power, real-time compute domain:**
  - Cortex®-M33 and DSP + IFX NNLite for ML
  - 512 KB RRAM, 1 MB SRAM
- **HMI:**
  - Traditional MCU HMI
  - Keyword Spotting & Wake Word Detection
- **ML:** NNLite, Advanced ML leveraging U55 and NNLite
- **Peripherals & IO:**
  - USB, 10/100 Ethernet, CAN, SPI, UART, I2C, I3C, I2S
  - Ultra-low-power always-on analog
- **Security:** Secured Enclave @ 25 JIL pts, fit for ARM PSA L2/L4

Operating Range

- -20 to 85°C Ta (Consumer), -40 to 105°C Ta (Industrial)

Status/Availability

- **In Development, prelim. DS available**
- **Samples & EVK** available (Edge E84)
- **Qualified samples** Q2 2025
- **SOP:** Q2 2025

Packages

WLB154
(4.3x5.3mm, 0.35mm)

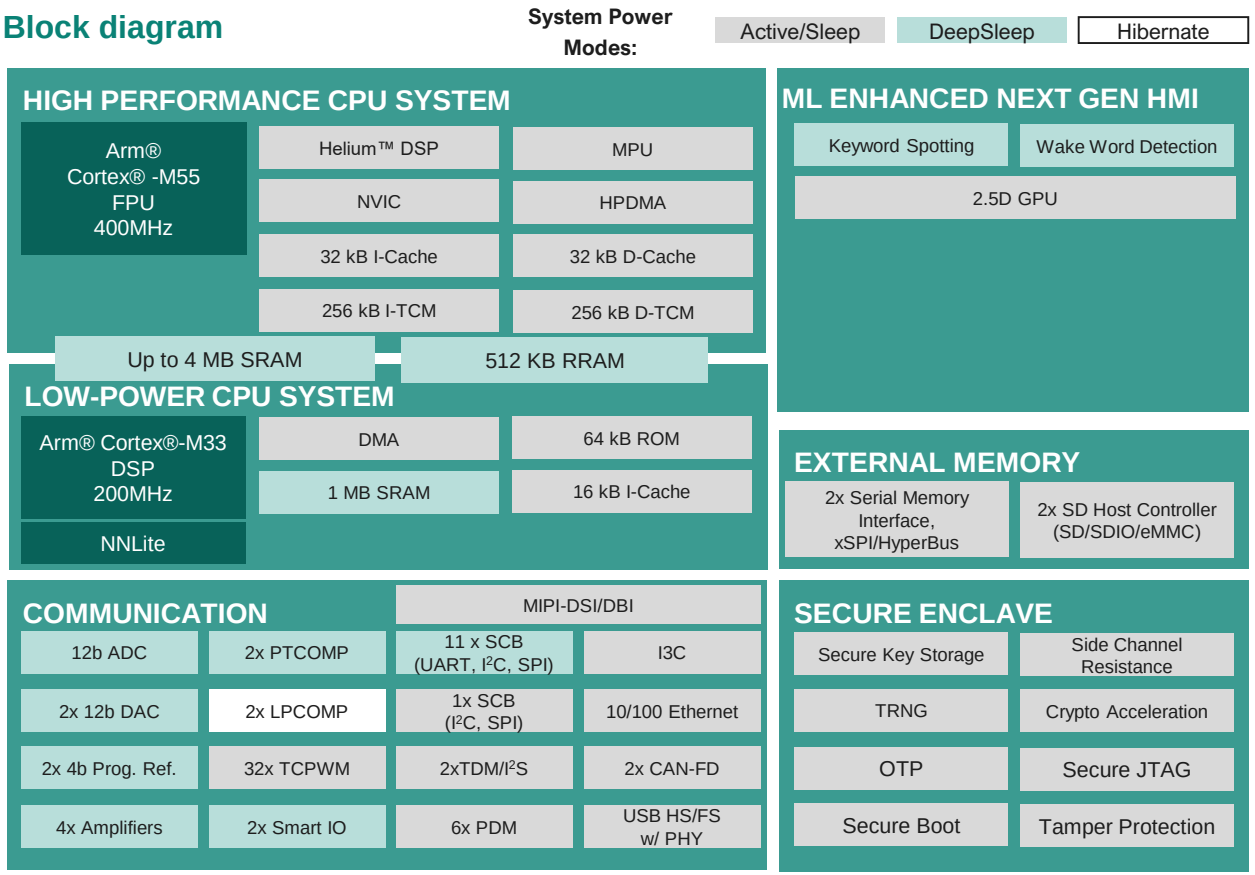
BGA220
(10x10mm, 0.65mm)

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PSOC™ Edge E82

Next Generation, Low-Power MCU

Block diagram



Status/Availability

- **In Development, prelim. DS available**
- **Samples & EVK** available (Edge E84)
- **Qualified samples** Q2 2025
- **SOP:** Q2 2025

Packages

WLB154
(4.3x5.3mm, 0.35mm)

BGA220
(10x10mm, 0.65mm)

Applications and Target Markets

- Smart Home, Appliances, Residential AC, Wearables, Industrial HMI, Smart Speakers, Point of Sale (POS), etc.

Product Highlights

- **High performance, real-time compute domain:**
  - Cortex®-M55 w FPU + Helium DSP
  - Up to 4 MB System SRAM, 256 KB I&D TCMs
- **Low power, real-time compute domain:**
  - Cortex®-M33 and DSP + IFX NNLite for ML
  - 512 KB RRAM, 1 MB SRAM
- **HMI:**
  - Traditional MCU HMI
  - Keyword Spotting & Wake Word Detection
  - **Low power Graphics, up to 1024x768, MIPI-DSI/DBI**
- **ML:** NNLite
- **Peripherals & IO:**
  - USB, 10/100 Ethernet, CAN, SPI, UART, I2C, I3C, I2S
  - Ultra-low-power always-on analog
- **Security:** Secured Enclave @ 25 JIL pts, fit for ARM PSA L2/L4

Operating Range

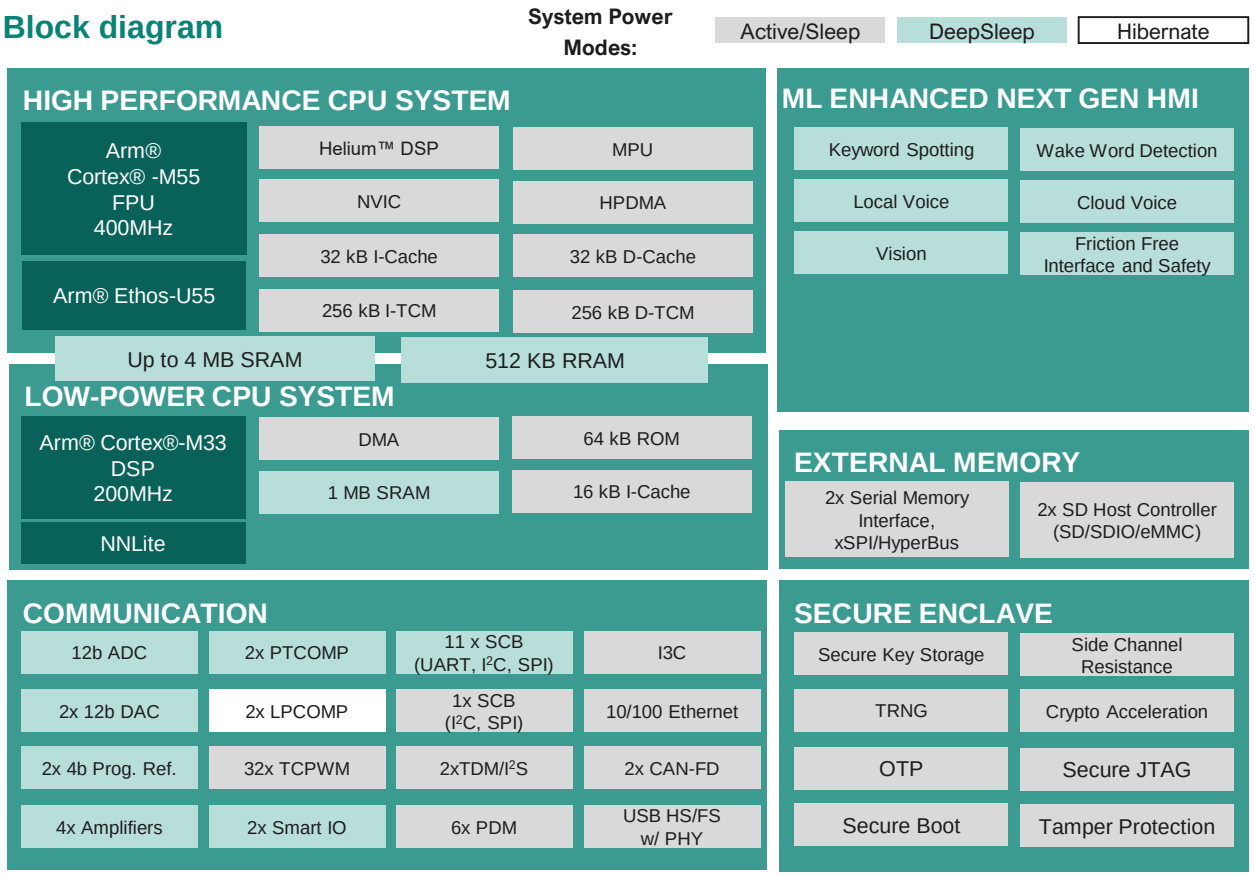
- -20 to 85°C Ta (Consumer), -40 to 105°C Ta (Industrial)

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PSOC™ Edge E83

Next Generation, Low-Power MCU

Block diagram



Status/Availability

- **In Development, prelim. DS available**
- **Samples & EVK** available (Edge E84)
- **Qualified samples** Q2 2025
- **SOP:** Q2 2025

Packages

WLB154
(4.3x5.3mm, 0.35mm)

BGA220
(10x10mm, 0.65mm)

Applications and Target Markets

- Smart Home, Appliances, Residential AC, Wearables, Industrial HMI, Smart Speakers, Point of Sale (POS), etc.

Product Highlights

- **High performance, real-time compute domain:**
  - Cortex®-M55 w FPU + Helium DSP + **Ethos-U55 for ML**
  - Up to 4 MB System SRAM, 256 KB I&D TCMs
  - Low power, real-time compute domain
  - Cortex®-M33 and DSP + IFX NNLite for ML
  - 512 KB RRAM, 1 MB SRAM
- **HMI:**
  - Traditional MCU HMI
  - **Local voice, cloud voice**
  - **Vision for friction free interface & safety**
- **ML:** Advanced ML leveraging Ethos-U55 and NNLite
- **Peripherals & IO:**
  - USB, 10/100 Ethernet, CAN, SPI, UART, I2C, I3C, I2S
  - Ultra-low-power always-on analog
- **Security:** Secured Enclave @ 25 JIL pts, fit for ARM PSA L2/L4

Operating Range

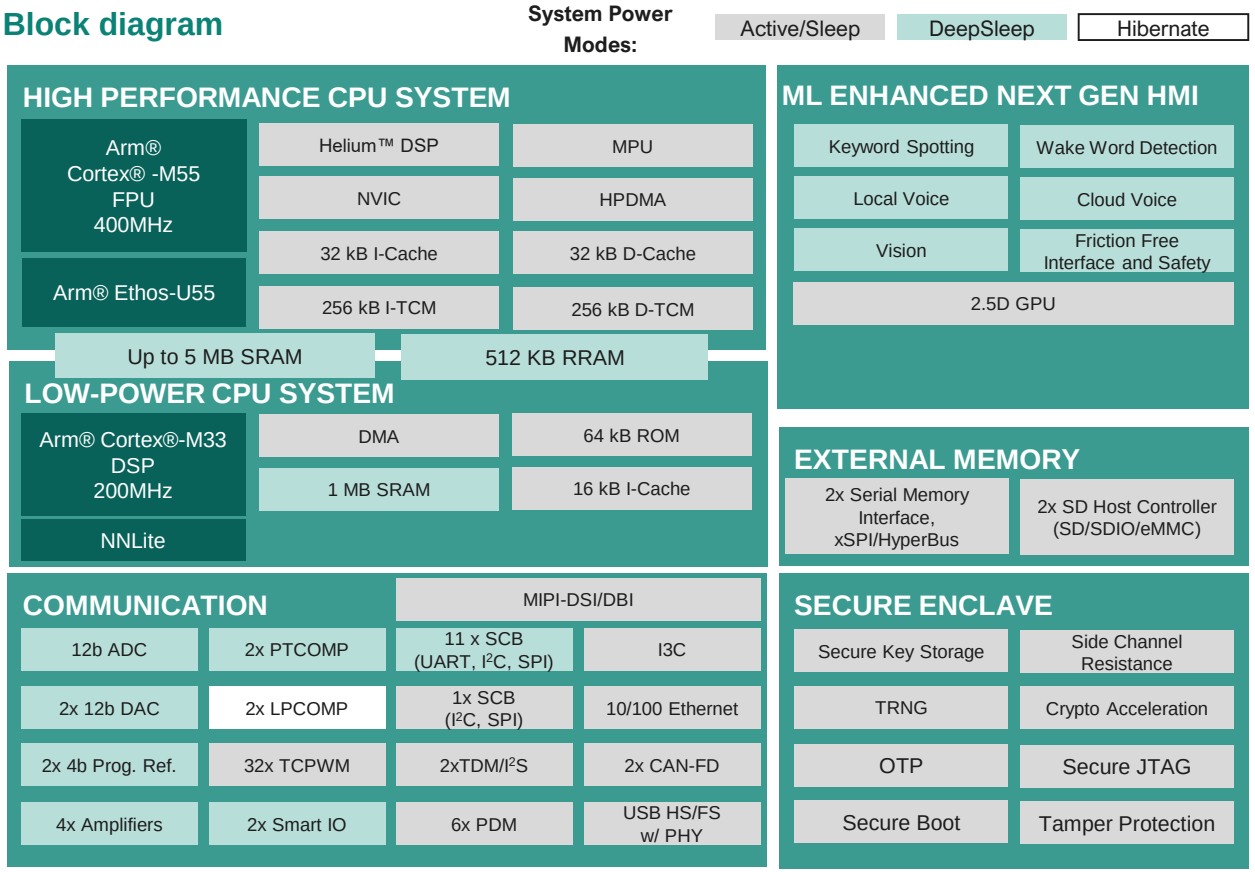
- -20 to 85°C Ta (Consumer), -40 to 105°C Ta (Industrial)

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PSOC™ Edge E84

Next Generation, Low-Power ML MCU Adds Graphics

Block diagram



Status/Availability

- **In Development, prelim. DS available**
- **Samples & EVK** available (Edge E84)
- **Qualified samples** Q2 2025
- **SOP:** Q2 2025

Packages

WLB154
(4.3x5.3mm, 0.35mm)

eWLB235
(7x7mm, 0.4mm)

BGA220
(10x10mm, 0.65mm)

Applications and Target Markets

- Smart Home, Appliances, Residential AC, Wearables, Industrial HMI, Smart Speakers, Point of Sale (POS), etc.

Product Highlights

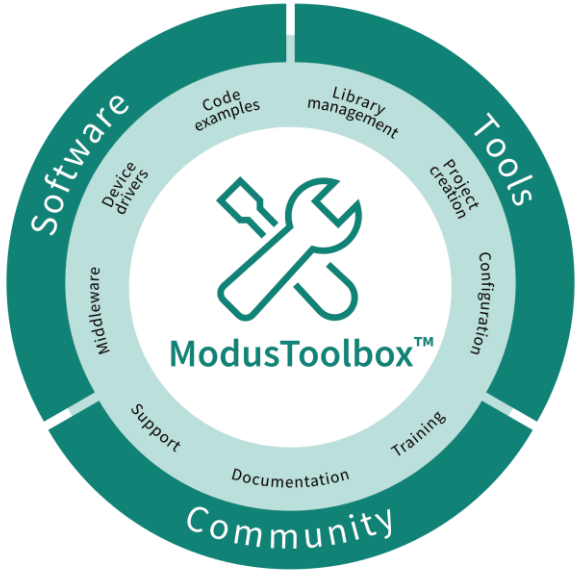
- **High performance, real-time compute domain:**
  - Cortex®-M55 w FPU + Helium™ DSP + Ethos-U55 for ML
  - **Up to 5 MB System SRAM**, 256 KB I&D TCMs
- **Low power, real-time compute domain:**
  - Cortex®-M33 and DSP + IFX NNLite for ML
  - 512 KB RRAM, 1 MB SRAM
- **HMI:**
  - Traditional MCU HMI
  - Local voice, cloud voice
  - Vision for friction free interface & safety
  - **Low power Graphics, up to 1024x768, MIPI-DSI/DBI**
- **ML:** Advanced ML leveraging Ethos-U55 and NNLite
- **Peripherals & IO:**
  - USB, 10/100 Ethernet, CAN, SPI, UART, I2C, I3C, I2S
  - Ultra-low-power always-on analog
- **Security:** Secured Enclave @ 25 JIL pts, fit for ARM PSA L2/L4

Operating Range

- -20 to 85°C Ta (Consumer), -40 to 105°C Ta (Industrial)

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ModusToolbox™ – Development ecosystem



- ModusToolbox™ Software is a modern, extensible development ecosystem 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

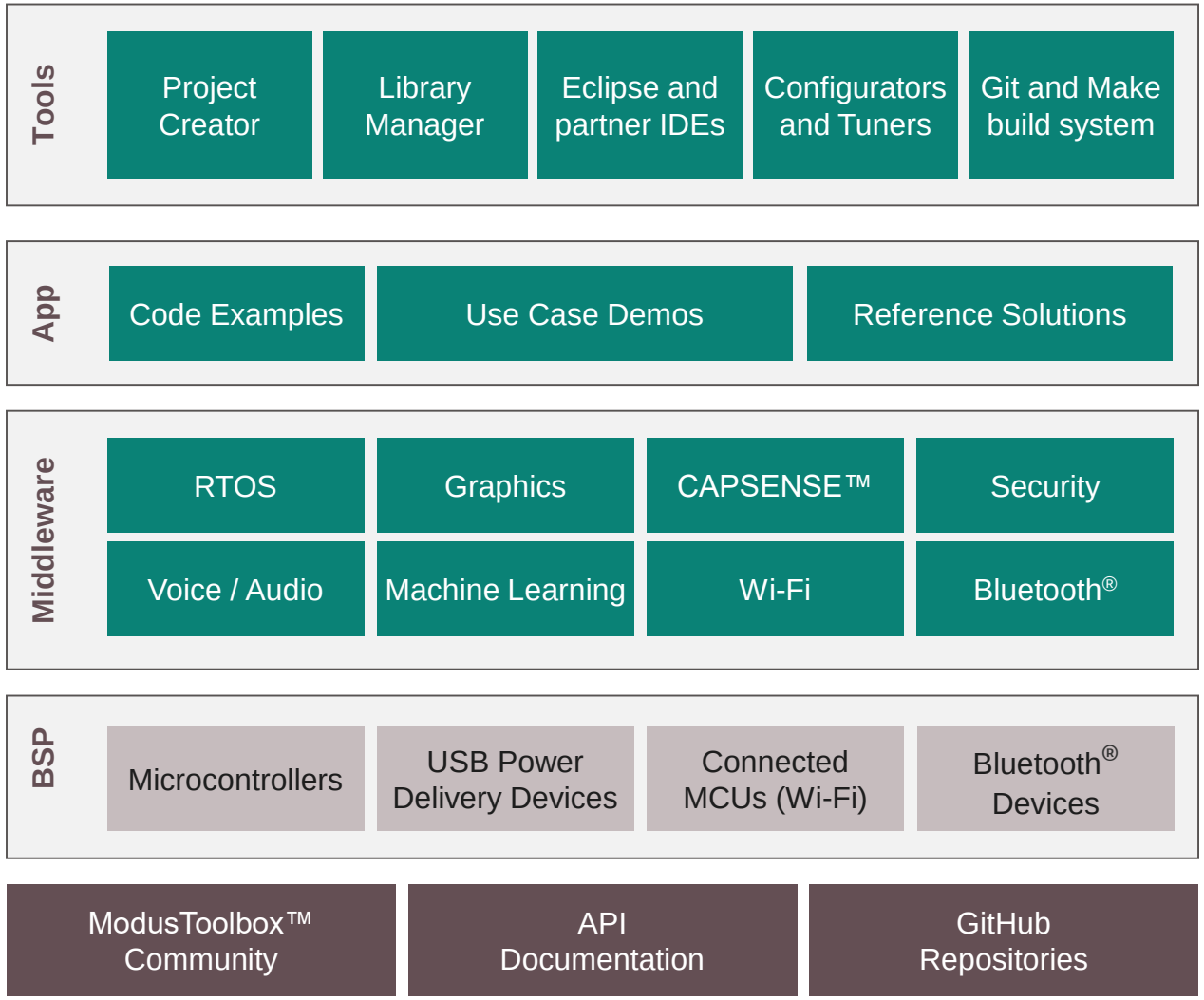
The ModusToolbox™ tools package includes desktop programs that enable the creation of new embedded applications, managing software components, configuring device peripherals and middleware, and embedded development tools for compiling, programming, and debugging.

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.

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ModusToolbox™ – Comprehensive collection of resources

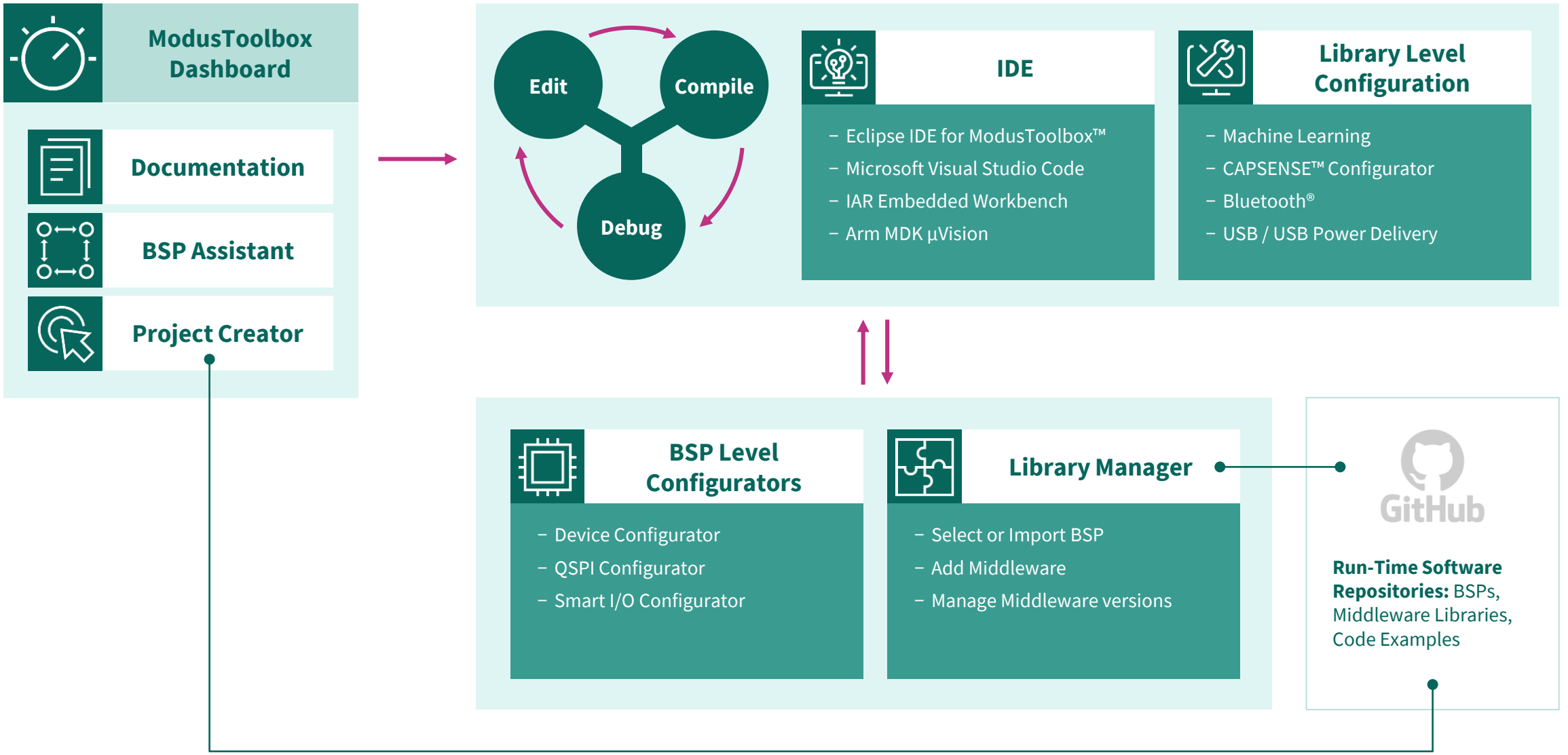


Enablement throughout the application development process

- IDEs – VS Code / IAR / Arm Keil / Eclipse
- Configurators and Code Generation
  - Device Configuration (Pins / Clocks)
  - CAPSENSE Configuration and Tuning
- Application Development Resources
- Middleware from Infineon and the ecosystem
- Board Support Packages / Device Packages
- Support and Documentation Resources
- Training Manuals and How-To Videos

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ModusToolbox™ – Complete development workflow



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ModusToolbox™ – Flexible Development Environment



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 (CI) and source code management systems

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DEEPCRAFT™ Studio + ModusToolbox™: from ML model development to embedded software

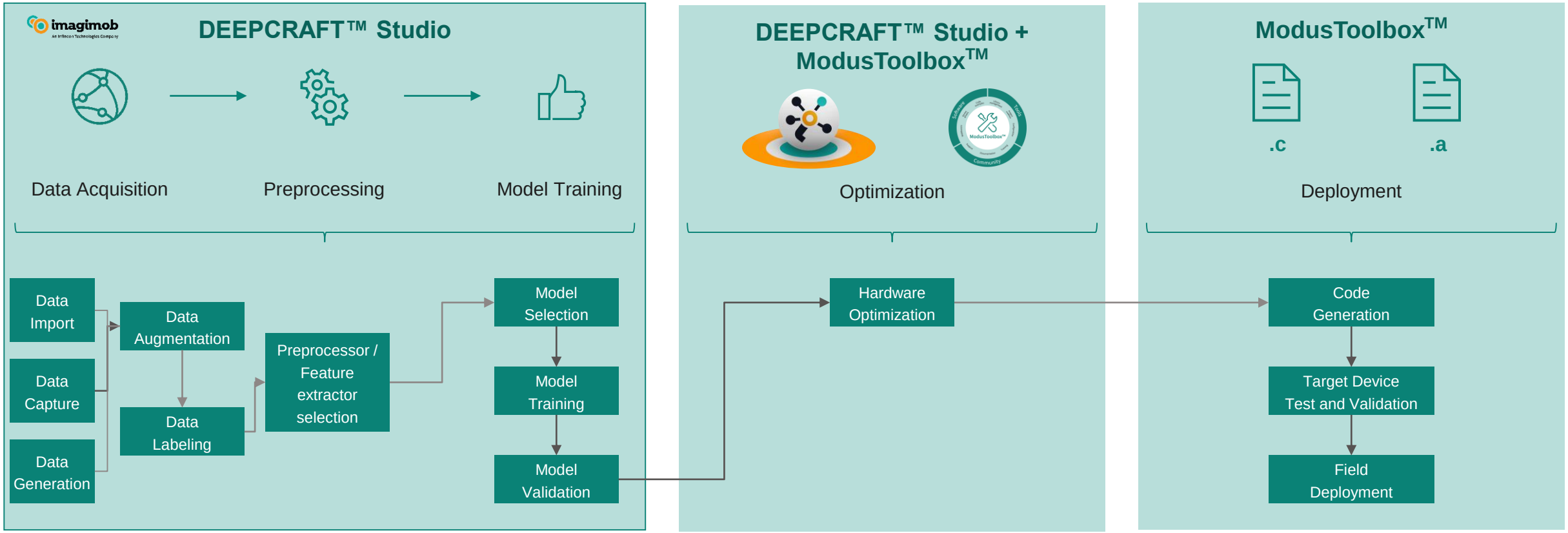
Bring your own data

Bring your own model — OR

Buy a Ready Model

Optimize & validate your model

Develop your embedded product with IFX MCUs



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Add AI to your devices easily with DEEPCRAFT™ Ready Models

DEEPCRAFT™ Ready Models

- These off-the-shelf models are the **fastest way to take Edge AI into production**
- Every model is **designed for the edge, with low memory and power consumption, and fast inference times**
- Trained by **our machine learning experts**
- **Comprehensively tested** on a large library of different datasets to ensure they work in all intended scenarios
- **Optimized for Infineon MCUs**, available for other MCUs

DEEPCRAFT™ Ready Models enable Edge AI solutions for wearables, smart homes, industrial, automotive and more!

- Baby Cry Detection
- Cough Detection
- Direction of Arrival
- Fall Detection
- Factory Alarm Detection
- Siren Detection
- Snore Detection
- Gesture Detection

Audio
Radar
Accelerometer

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DEEPCRAFT™ Ready Model MCU requirements

Ready Model	RAM (kB)	Flash (kB)	Infineon MCU it runs on*	ARM architecture*	Inference (ms) on PSOC™ 6	Sensitivity*** (%)
Gesture detection	3	45	PSOC 6	CM4	8	92
Fall detection	6	15	PSOC 4	CM0	1	93
Snore detection	24	53	PSOC 6	CM4	23	92
Baby Cry detection	27	27	PSOC 6	CM4	127	95
Cough detection	27	82	PSOC 6	CM4	150	95
Factory Alarm detection	27	32	PSOC 6	CM4	144	90
Siren detection	60	51	PSOC 6	CM4	20	92
Direction of Arrival (Audio)	826	186	PSOC Edge	CA72	82**	97

* Minimum requirement for running the model, higher processors offer better performance and scalability
** This model cannot run on PSOC™ 6, inference is instead calculated on an Arm CA72 processor
*** represents the proportion of actual positive cases that are correctly classified as positive by a model, the true positive rate

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Infineon IoT Compute & Wireless (ICW)

AIROC™ Wi-Fi + Bluetooth® Combo Roadmap (NDA)

Wi-Fi Combos		Wi-Fi 4 5	Wi-Fi 6 6E	Wi-Fi 7
2x2 AIROC™	High Performance	**54590/1** **Wi-Fi 5 DB 80MHz** **BT/LE 5.1** 2x2 MIMO (54590) 1+1 RSDB (54591) PCIe/SDIO	**55572/3** Hatchet-2 **Wi-Fi 6/6E DB/TB 80MHz** **BT/LE 6.0** 2x2 MIMO Range boost, PCIe/SDIO PSA L1 /EPC1 security BT/LE audio	**Sapphire** Planned **Wi-Fi 7**
1x1 AIROC™	High Performance	**4373/E** **Wi-Fi 5 DB 80MHz** **BT/LE 5.4** PCIe/SDIO/USB -40 to 85C	**55570/1** Hatchet-2 **Wi-Fi 6/6E DB/TB 80MHz** **BT/LE 6.0** Range boost, PCIe/SDIO PSA L1/EPC1 security BT/LE audio	**Ruby** Planned **Wi-Fi 7**
	Ultra Low Power	**43022** **Wi-Fi 5 DB 20MHz** **BT/LE 5.4** Embedded BT/LE stack Secure boot + FW auth 20dBm BT, shared SDIO/SPI 65% lower sleep power Pin to Pin with 43012	**55512/3** Hatchet-1 **Wi-Fi 6/6E DB/TB 20MHz** **BT/LE 6.0** BT/LE audio w/ embedded stack Range boost, Shared SDIO/SPI PSA L1/EPC1 security 20dBm BT/LE	**Diamond** Development **Wi-Fi 7** **Diamond 2** Planned **Wi-Fi 7**
	Mainstream	**43439** **Wi-Fi 4 SB 20MHz** **BT/LE 5.4** Shared SDIO	**55532/3** Hatchet-1 W ES: NOW MP: Q225 **Wi-Fi 6/6E DB/TB 20MHz** Range boost PSA L1/EPC1 security USB/SDIO/SPI	

SB: 2.4GHz Single-Band; **DB:** 2.4/5GHz Dual-Band; **TB:** 2.4/5/6GHz Tri-Band

Linux, Android, RTOS – Low Power, Robust Wireless, RF Coexistence, Network Offload, Context Aware, Advanced Security

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CYW43022: Ultra Low-Power 1x1 DB Wi-Fi 5 + Bluetooth® 5.3 Combo

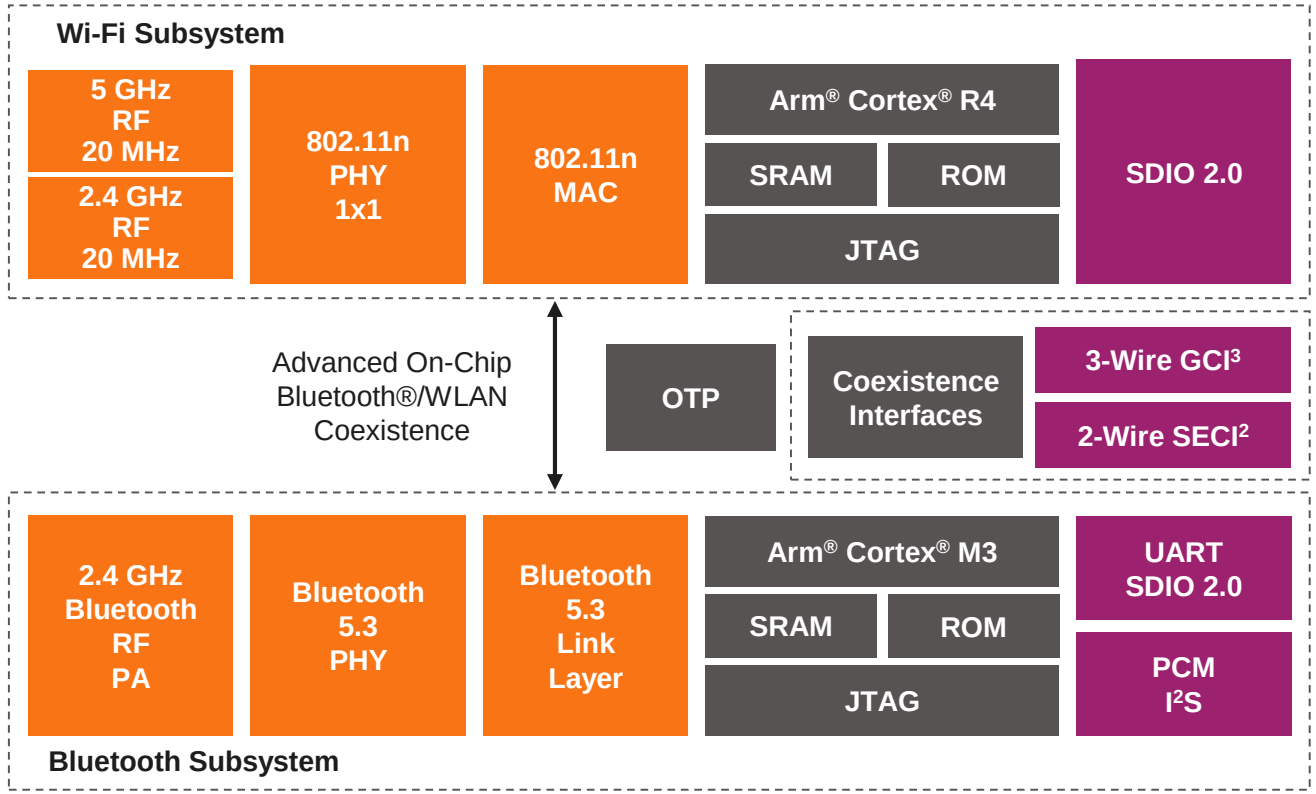
Features

- **802.11n-compliant Wi-Fi**
  - Up to 72.2-Mbps data rate
  - Dual band (2.4/5 GHz) with on-chip PAs and LNAs
  - SDIO 3.0 interface (up to 50 Mbps)
- **Low-power 802.11ac compliance in 5 GHz**
  - 256-QAM support on 20-MHz channels in the 5-GHz band
  - MCS8 enables up to 78-Mbps data rate
- **New Deep Sleep mode enabling improved DTIM power states**
  - Wi-Fi Host Offloads
  - ~100ms additional recovery time from deep sleep
- **Bluetooth® 5.3 Compliant**
  - All Bluetooth® 4.2 optional features and Bluetooth® 5.3 2-Mbps LE, 2Mbps
  - Class 1 (100 m) and Class 2 (10 m) operation
  - **Class 1 BT PA +20dBm Transmit Power with updated output power control**
  - Host controller interface (HCI)-over-UART
  - 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

IP Cameras, Door-Bells, Thermostats, Smart Door Bells, Battery Powered IoT

Wireless Connectivity Family | CYW43022



Availability

In Production

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43022 ultra-low power Wi-Fi design enables longer battery life



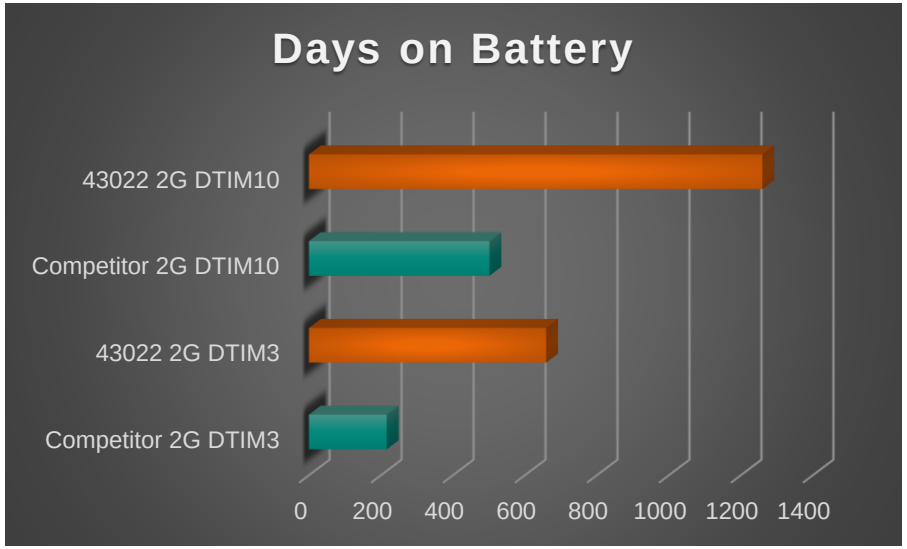
Low power

70% ↓ Sleep power consumption than competitor Wi-Fi products

>50% ↓ Idle connected power consumption than competitor Wi-Fi products

Mode	Band (GHz)	Channel (MHz)	CYW43022	Competitor 28nm 1x1 20MHz Device	Units	Power Savings Advantage
Sleep	2.4	20	0.05	0.17	mW	ê70%
DTIM 1	2.4	20	0.9	1.8	mW	ê50%
DTIM 3	2.4	20	0.36	0.88	mW	ê59%
DTIM 10	2.4	20	0.13	0.37	mW	ê65%

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)

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CYW55513/2/1 – Low Power 1x1 Wi-Fi 6/6E Tri-Band + BT 5.4 Combo

Features

Wi-Fi/WLAN Features
- 20MHz channel BW with support for 11ax 2/4/8MHz OFDMA Channels
- 11ax Range Improvements: ER-PPDU, Longer Guard Intervals, 6E Band
- **+24dBm** at DSSS-1Mbps/11Mbps and Legacy Pre-Amble Boost
- **-101.5dBm sensitivity at 1Mbps for improved range**
- 11ax Target Wake Time (TWT) saves power and improves coexistence
- High network efficiency/reduced contention w/ BSS Color and Dynamic CCA
- **Support for internal or external LNA/PA and antenna diversity**

Bluetooth Features
- Low Power Bluetooth / BLE 5.4
- **Embedded or Hosted Bluetooth/BLE Airoc Stack**
- **Embedded LE Isochronous Channels w/LC3 CODEC for BLE Audio**
- **LE 2M, LE LR, ADV Extensions,**
- 3 output power paths optimized for best efficiency: **0/ +13/ +19dBm**
- **Support Bluetooth antenna shared with Wi-Fi or dedicated Bluetooth Ant**

Interfaces
- SDIO 3.0, Shared SDIO, GSPI interfaces for WLAN
- HSUART or Shared SDIO for Bluetooth, Audio: **2xTDM (I2S/PCM), DMIC**
- Supports **internal 1% accuracy 32.7kHz LPO (Wi-Fi)** or external crystal LPO

Coexistence
- Advanced coexistence 2-Wire BTSIG WCI-2 (LTE) and 3-Wire (ZigBee)

Security
- Lifecycle Management, Secure Boot, FW authentication and encryption, Crypto Key Establishment and Management, Crypto Offloads, Anti-Rollback
- Arm Trustzone Crypto-Cell 312 → PSA Level 1 Certifiable

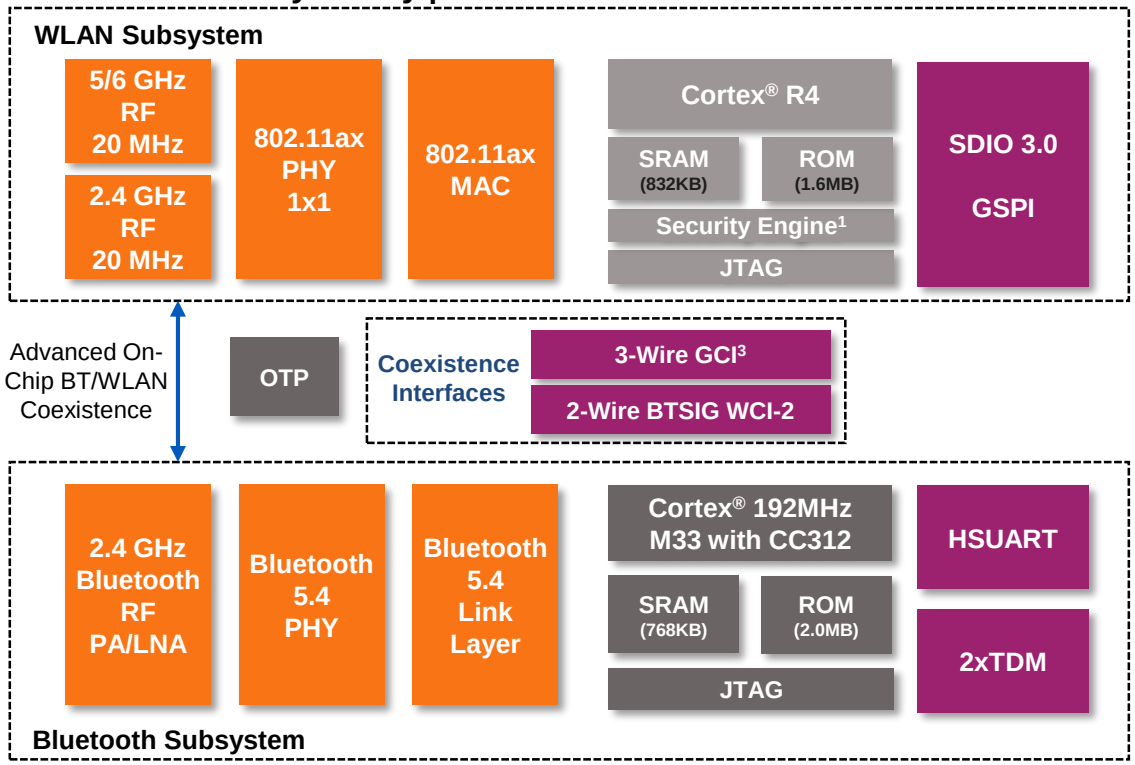
Package
- WLBGA 3.57 x 5.31 mm x 0.450 mm (max) (0.35 mm ball pitch)

Temperature: -40°C to 85°C

Applications

Smart Watches, Smart Home, IP Cameras, Door Locks, Appliances, Printers, Industrial, Audio, Smart Speakers, Speakers, Conference Systems, Gaming Controllers, Cameras

Wireless Connectivity Family | 5551x



Availability

In Production

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CYW5557x: 2x2 &1x1 Wi-Fi 6/6E Tri-Band + Bluetooth® 5.3 Combo

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 date rate
- 802.11ax STA mode and Soft AP mode with 11ax scheduled access
- 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

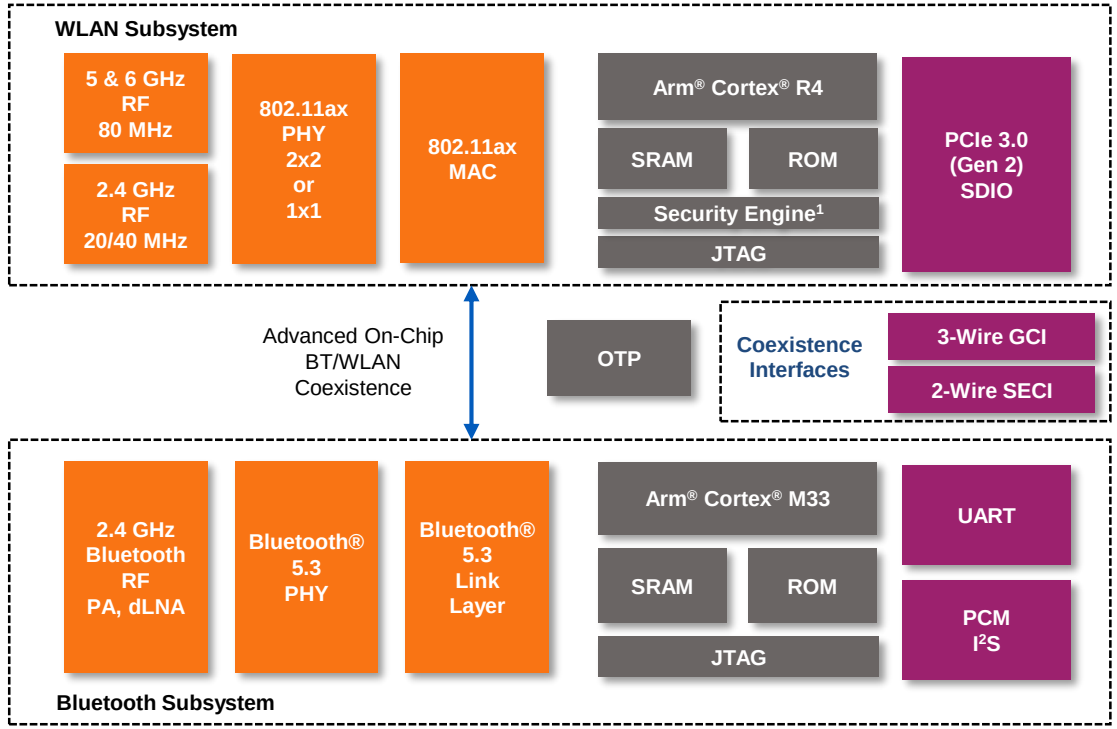
Interfaces
- PCIe Gen2 (3.0 Compliant), SDIO for WLAN
- HCI-UART, PCM/I2S for BT

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 12x12 mm (0.65 mm ball pitch)
- WLCSP: small form factor (0.2mm ball pitch) for module partners
- WLBGA : small form factor (0.35mm ball pitch)

Temperature: -40°C to 85°C

Wireless Connectivity Family | 55572/3



Availability

In Production

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Ultra-Low-Power 1x1 20Mhz Tri-band Wi-Fi 7 + Bluetooth LE 6.0 + 802.15.4

Diamond Product Overview

Tri-radio

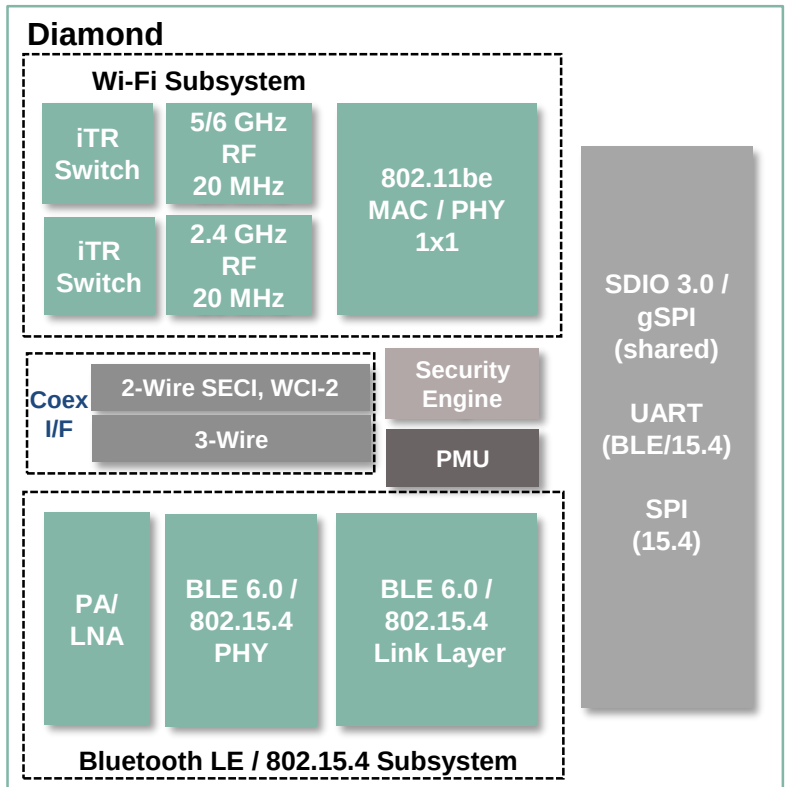
Ultra-low Power

Sensing

Low-cost package

- ✓ **Wi-Fi 7 Tri-band optimized for IoT**
  - 1x1 20MHz MLSR (Multi Link Single Radio)
  - Best in class range performance with +23dBm Tx power, Range boost w/ ER-PPDU, Longer GI, DCM
  - Extended range with ePA and eLNA support
  - Matter over Wi-Fi and Thread
- ✓ **802.15.4/Thread and Bluetooth LE 6.0**
  - +20/13/4 dBm enhanced Tx power
  - LE-LR, LE1M, LE2M, BT5.x and 6.0 features
  - Bluetooth LE, 802.15.4, Wi-Fi coexistence
- ✓ **Ultra-low-power 22nm design with industry's lowest power consumption**
  - Wi-Fi low power standby DTIM10 90uW (2GHz) and 71uW (5GHz)
  - Bluetooth LE Slow advertisement (1.28s) – 73 uW
  - System level power optimization with extensive network offloads
- ✓ **Sensing/Ranging/Contextual Awareness**
  - Wi-Fi 802.11bf CSI presence detection
  - Bluetooth LE Channel Sounding
- ✓ **Optimized BOM / QFN package for low-cost PCBs**
  - 7x7 60QFN (0.4mm pitch)
  - Shared SDIO/SPI host I/F for easier routing
  - Internal Wi-Fi 2.4 & 5/6GHz LNA, PA and TR switches
  - Internal LPO for sleep operation

Tri-radio Wi-Fi 7 / Bluetooth LE 6.0 / 802.15.4



Availability

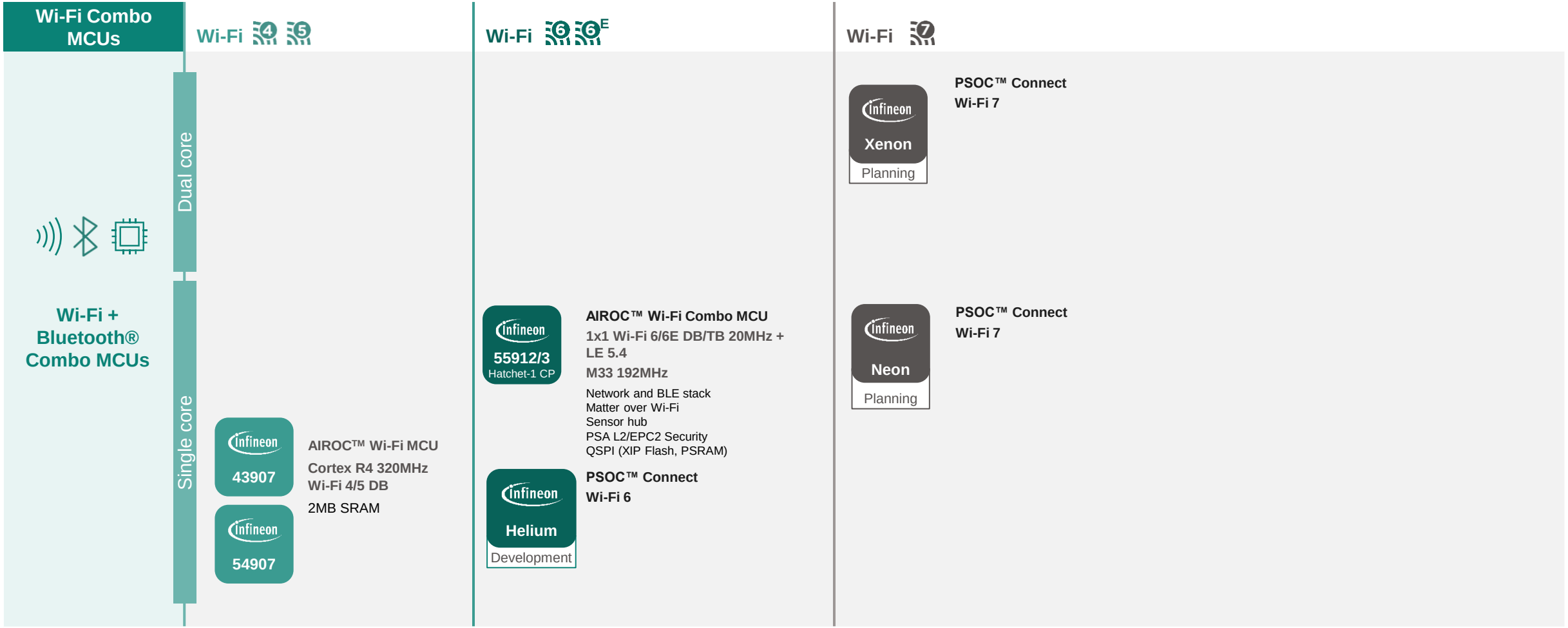
Samples: Q1'26

Production: Q2'26 DB, Q4'26 TB

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Infineon IoT Compute & Wireless (ICW)

PSOC™ Connect and AIROC™ Wi-Fi + Bluetooth® MCU Roadmap (NDA)



ModusToolbox™

- Extensive Application code examples, middleware, BSPs in GitHub repository
- Rich set of tools: HMI, Machine Learning, Security, Voice/Audio, and more
- Community support and documentation resources

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CYW55913/2/1 - 1x1 Wi-Fi 6/6E Tri-Band Connected MCU w/BLE 5.4

Features

Wi-Fi/WLAN Features
- Best in class Wi-Fi 6/6E + BLE 5.4 RF performance (same as 55513)

Arm Cortex 192MHz M33 Connected MCU with Arm Trustzone CC312
- Stand alone or offloads host saving system power and easing implementation
- Cortex M33 192MHz runs Wi-Fi and Networking Stacks from Arm CM33 ROM
  - Modus Toolbox supporting Azure ThreadX RTOS
  - TCP/IP (NetX Duo), TLS 1.3 (NetX Secure) , HTTP(S), MQTT
- 300KB+ for user code in CM33 SRAM
- Option to Boot and XiP from external Flash/PSRAM On-the-Fly AES encryption

Bluetooth Low Energy 5.4 Radio not shared with Wi-Fi
- LE 2M, LE LR, ADV Extensions, LE Iso Channels (Non-Audio)
- 3 output power paths optimized for best efficiency: 0/+13/+19dBm

Peripherals
- SDIO 3.0 (>40Mbps w/TLS), GSPI (>20Mbps w/TLS), UART (4Mbps w/TLS)
- IOs: 3x SCB (I2C/SPI/UART), 1xDigital Mic/PDM (L&R), 1xAnalog Mic, 7 ch 12b ADC, 2x Comparator, 2x TDM (I2S/PCM), TCPWM, QSPI (Flash/ PSRAM)
- 3-Wire and 2-Wire Coexistence Interface for 802.15.4/Cellular/GPS

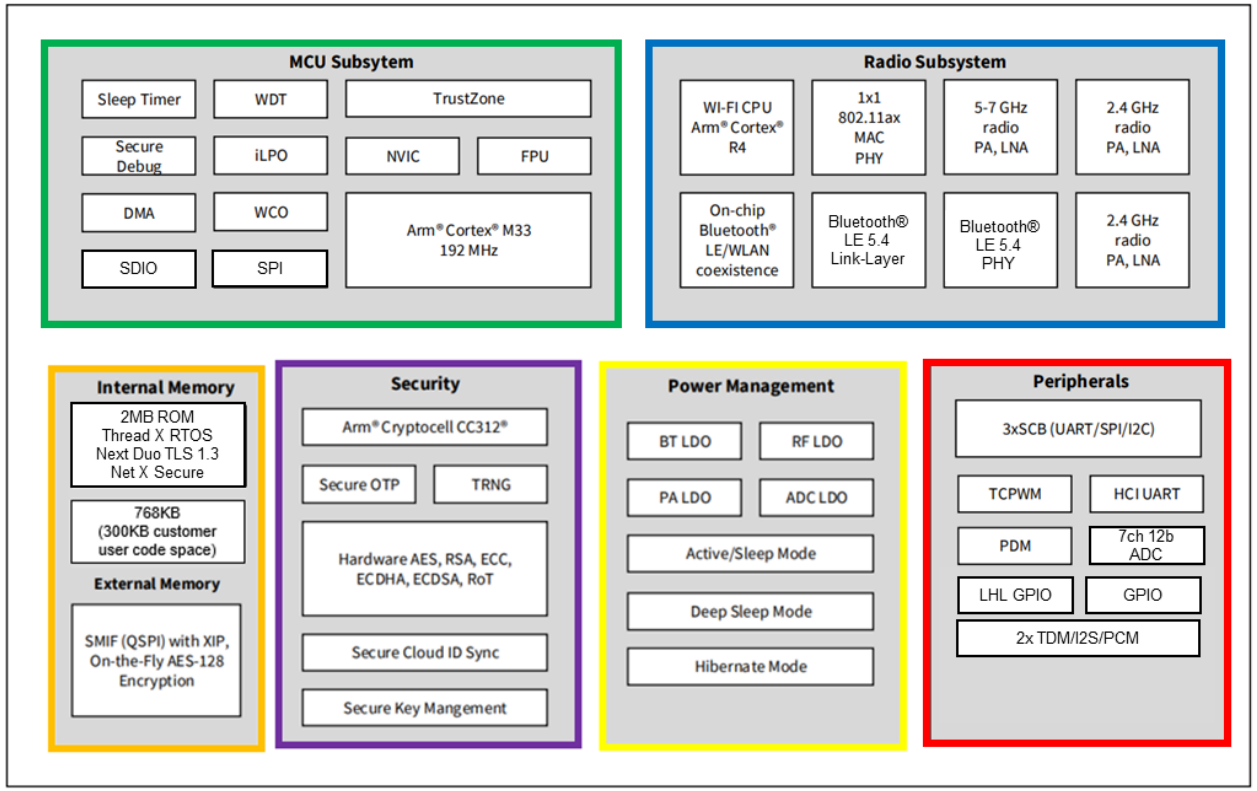
Security
- Lifecycle Management, Secure Boot, FW authentication and encryption, Crypto Key Establishment and Management, Crypto Offloads, Anti-Rollback
- Arm TRNG, Trustzone Crypto-Cell 312
- PSA Level 2 Certifiable

Power Supply
- VBAT: 3.3V; VDDIO: 1.8V

Package
- WLBGA 3.57 x 5.31 x 0.45mm (0.35 mm ball pitch) – P2P w/ 55513

Applications

Smart Home, IPcams, Door Bell Cameras, Smart Locks, Thermostats, Appliances, Door Locks, Wi-Fi Speakers, Smart Hubs/Gateways, Industrial,



Availability

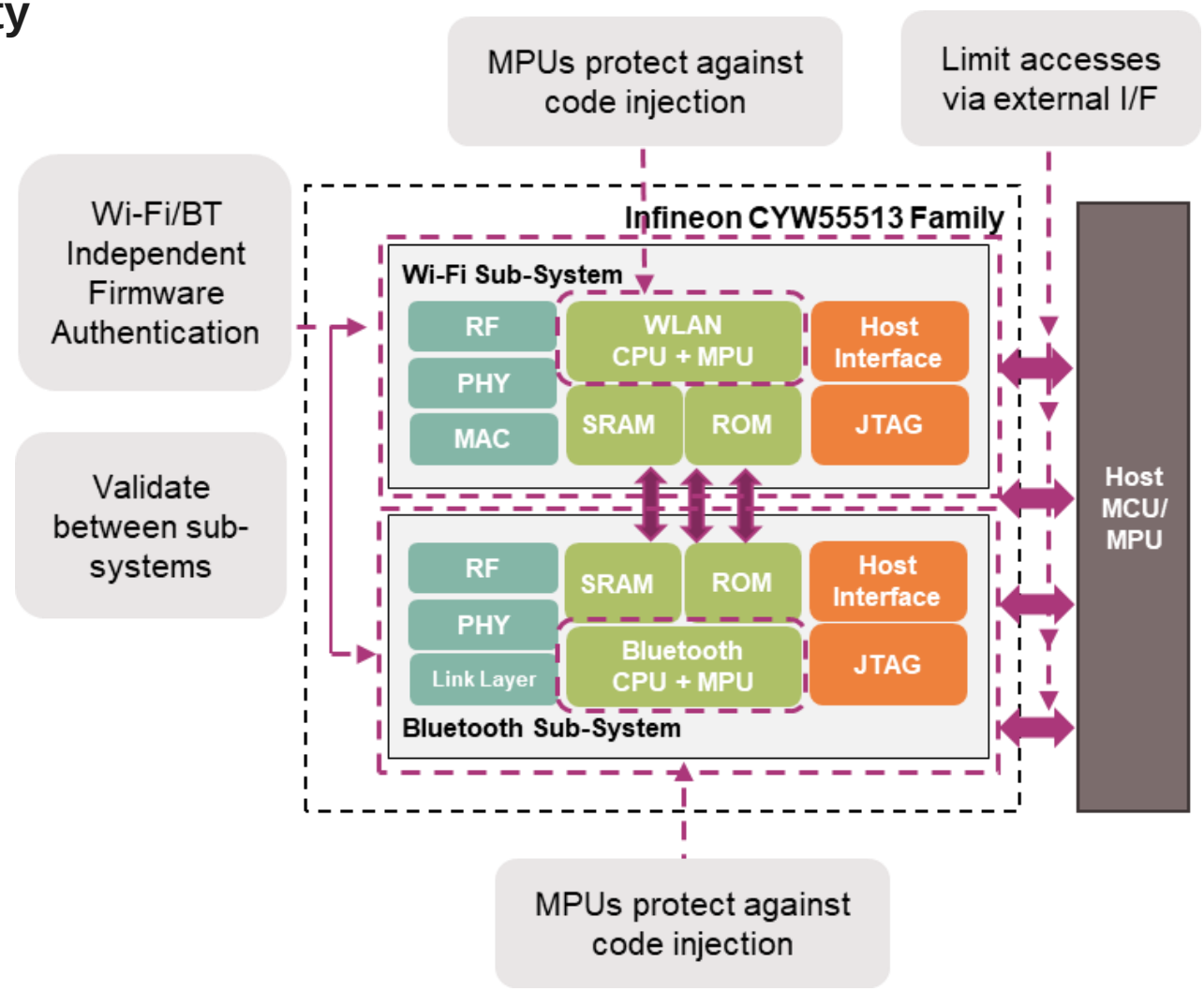
Samples: now **Production:** Q2 2024

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AIROC™ Security Features

CYW55513/55913 Advanced Multi-Layer Security

- Lifecycle management
- Crypto key establishment & management
- Multiple redundant levels of defense
- Crypto offloads
- Secure boot
- Firmware authentication
- Firmware encryption
- Anti-rollback prevention



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Wi-Fi Network Stack Host Offloads

Offload Feature	Description
ARP Offload (AOE)	WIFI chip handles ARP request and reply traffic without having to wake up the host.
DHCP Lease Time Renew Offload (DLTRO)	WIFI Chip takes care of renewing the DHCP lease renewal process without disturbing the host.
GTK Offload (GTKOE)	GTK Rekey which initiated by Access point is responded by WIFI chip itself.
TCP Keepalive Offload (TKO/TCPKA)	WIFI Chip sends periodic TCP keepalives and response to TCP keepalives while host is sleeping to maintain the connection with TCP server.
Neighbor Discovery Offload Engine (NDOE)	WIFI Chip handles Neighbor Solicitation request and reply with Neighbor Advertisement, without having to wake up the host.
Preferred Network Offload (PNO)	Minimizes hosts WLAN Management roles especially for scanning by doing background scanning on its own and only inform/wake the host when certain events occur.
Keep Alive (L2 KA/NAT KA)	Layer2 (WIFI NULL data) or Layer3 keep alive sent when Access point/Server expects keep alive messages.
Packet Filters/Wake-on-wireless (wowlpf)	Packet filter determines whether packets received by the dongle are forwarded to the host processor or dropped by dongle based on filter criteria specified by the host application.
ROAM offload	Roaming done by WIFI chip to find the better AP.
Matter offload (mDNS/IPV6) – In development	WIFI chip be able to take care of responding/skipping the mDNS frames to avoid disturbing the host Packet filter can be configured to skip the frames not intended for “my” device.
MQTT offload	Very similar to TCP Keep alive, to keep the MQTT connection alive when host is sleeping. MQTT keep alive request and response sent from WIFI Chip
ICMP offload	Ping reply to ping request from peer is sent by WIFI chip.
TLS offload	TLS offload

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1x1 Wi-Fi Comparison: CYW55913/55571/4373/43012/43022

Device Type/Features			Wi-Fi + Bluetooth® Combo Devices for iPA/iLNA					
			11ac 1x1	11n 1x1	11n 1x1	11ax 1x1	11ax 1x1	
Device	Band (GHz)	BW (MHz)	CYW4373/43455	CYW43012	CYW43022	CYW55571	CYW55913	Unit
2.4GHz 1Mbps Sensitivity	2.4	20	-98.8	-98	-98	**-101.5**	**-101.5**	dBm
5GHz 6 Mbps OFDM Sensitivity	5	20	-95	-95	-95	**-96**	**-94.5**	dBm
2.4GHz 1Mbps Transmit Power	2.4	20	+20	+20	+20	**+23**	**+24 @ 3.3V**	dBm
5GHz 6 Mbps Transmit Power	5	20	+19	+20	+20	**+20**	**+20.5 @ 3.3V**	dBm
Sleep	-	-	0.47	0.17	0.04	0.27	0.27	mW
DTIM 1 (~100ms)	2.4	20	6.1	1.80	0.87	4.5	2.2	mW
DTIM 3 (~300ms)	2.4	20	2.4	0.72	0.32	1.4	0.94	mW
DTIM 10 (~1 sec)	2.4	20	1.1	0.32	0.12	0.69	0.48	mW
Rx Power 1Mbps, 100% Duty Cycle	2.4	20	292 (MCS7)	75	75	124	96	mW
Rx Power 6Mbps, 100% Duty Cycle	5	20	378 (MCS7)	79	79	155	126	mW
Tx Power Consumption 1Mbps 100% Duty Cycle iPA	2.4	20	1152 @ 19dBm	675 @ 18dBm	675 @ 18dBm	691 @ 20.5 dBm	855 @ 22.5 dBm	mW
Tx Power Consumption 6Mbps 100% Duty Cycle iPA	5	20	1332 @ 17dBm	957 @ 18dBm	957 @ 18dBm	866 @ 18 dBm	851 @ 19 dBm	mW

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Industry-Leading Low Power Wi-Fi

Modes	Band (GHz)	BW (MHz)	CYW55513 Wi-Fi 6	Diamond Wi-Fi 6/7	Diamond vs 55513	Unit
Wi-Fi Sleep			0.2	0.02	89%	mW
DTIM 1 (100ms)	2.4	20	1.90	0.69	64%	mW
DTIM 3 (300ms)	2.4	20	0.78	0.24	69%	mW
DTIM 10 (1 sec)	2.4	20	0.38	0.09	76%	mW
DTIM 1 (100ms)	5	20	1.48	0.47	68%	mW
DTIM 3 (300ms)	5	20	0.64	0.17	73%	mW
DTIM 10 (1 sec)	5	20	0.35	0.07	80%	mW
Rx active 1Mbps, 100% Duty Cycle	2.4	20	96	47	51%	mW
Rx active 6Mbps, 100% Duty Cycle	5	20	126	59	53%	mW
Tx active MCS7, 100% Duty Cycle	2.4	20	766 @ 18dBm	607 @ 18dBm	21%	mW
Tx active MCS7, 100% Duty Cycle	5	20	979 @ 18dBm	730@ 18dBm	25%	mW

Improvements

Sleep power ~90%

DTIM power ~70-80%

Rx power ~50%

Tx power ~25%

Continue to lead industry with ultra low power consumption

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Broad portfolio of Wi-Fi/BT Products for IoT and Automotive

5557x
Industry's best range Wi-Fi 6/6E + LE-Audio
>40% better than standard Wi-Fi 6/6E

5551x
IoT Optimized Wi-Fi 6/6E + LE-Audio
>40% better than standard Wi-Fi 6

5551x
Low Power Wi-Fi 6/6E + LE connected MCU
Best range performance + rich peripherals

5459x
Reconfigurable 2x2 MIMO and RSDB
High-performance, whole home coverage

4373
Best general-purpose Combo
Industrial temp. qualified, USB/PCIe/SDIO

43022
Industry's lowest power
>70% battery life vs. closest competitor

43439
Best entry-level Wi-Fi/BT Combo
Family shipped over 300Mu

Automotive versions available

Enabled by module partners…

muRata INNOVATOR IN ELECTRONICS
USI
AzureWave
QUECTEL
ezurio
u-blox

Software ported and optimized on…

Linux, Android

NVIDIA — Jetson, Xavier, Orin
Rockchip — PX30, RK3308, RK3399, RK3566, RK3568, RK3588
Ambarella — CV2x, CV22, CV25, CV28, CV3, CV5
iCatch 芯鼎科技 — Vi37, Vi57, Vi77 (Q124)
ST — STM32 MP15x/13x, STM32 MP2 (Q423)
NXP — i.MX6, i.MX7, i.MX8 i.MX9

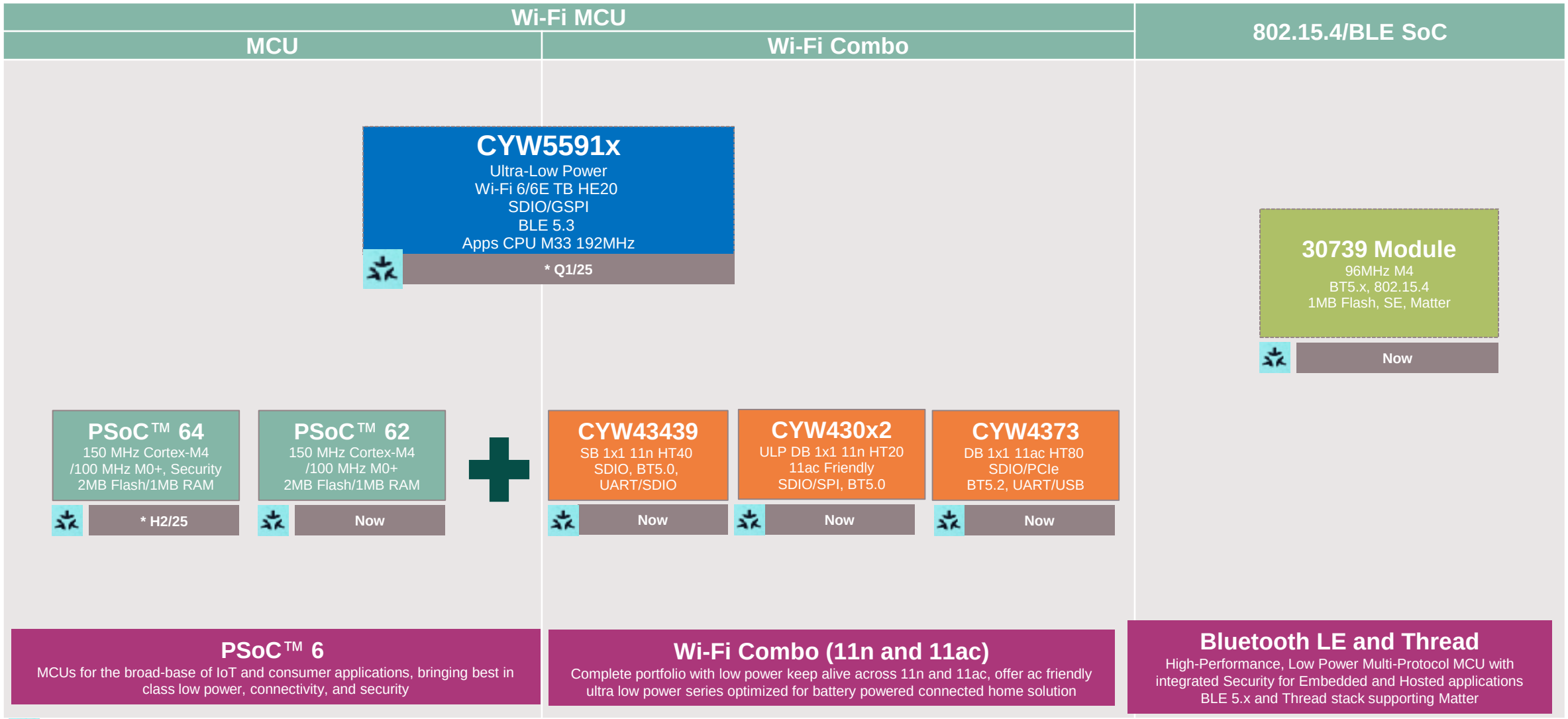
RTOS

ST — STM32H7, H5, U5, L5
NXP — I.MX RT1050/1060, I.MX RT500/600, I.MX RT1160/1170
OmniVision — OA804/805, OA8000/7000, OA8100/7100

New Arrival In progress

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Matter Connectivity Roadmap Summary



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Infineon IoT Compute & Wireless (ICW)
PSOC™ Connect & AIROC™ BT/BLE/15.4 Roadmap

BT/BLE/15.4 MCUs		32-bit Arm® Cortex® M0/M0+/M3 Single Core	32-bit Arm® Cortex® M4/M33 Single Core	32-bit Arm® Cortex® M4/M33 Dual Core
PSOC™ Connect	BLE 6 / 15.4			Atomic 2 (Planned): LE 6 Atomic 3 (Planned): LE 6, Thread Atomic 4 (Planned): LE 8 Atomic 1 (Planned): LE 6
AIROC™ Bluetooth LE MCU	BLE 5.x	PSOC 4 BLE: LE 4.2/5.1, Cortex M0, Up to 256K Flash, 32KB RAM, CAPSENSE™	20835: LE 5.2, Cortex M4 SoC, 384KB RAM	PSOC 63 BLE: LE 5.2, Dual M4 & M0+, Up to 1M Flash, 288K RAM, CAPSENSE™, ZEPHYR 20829 / 89829: LE 5.4, Dual M33, 1MB/2MB Flash, 256K+96K RAM, ZEPHYR, PSA L1/EPC1
AIROC™ Bluetooth Dual Mode SoCs	Classic & LE	207XX/ 89072: BT 5.2/LE, Cortex M3, 352KB RAM	20721 20819/ 820 89820: BT 5.2/LE, Cortex M4, 819/820: 256K Flash, 176K RAM, 721: 1M Flash, 512K RAM	



Full featured 64 BGA, **4.5 x 4.5 mm**, 26x GPIOs
Physical security for flash

Software & Tools – AIROC™ Bluetooth stack, BLE libraries, Security, MCU Middleware and ModusToolbox™ and AIROC™ Connectivity Apps for iOS/Android

Bluetooth Ecosystem – Matter, Amazon Sidewalk, Apple FindMy, Quupa Locationing and others

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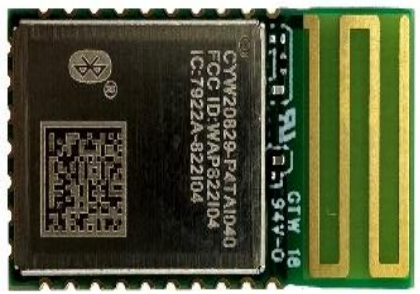
CYW20829: BLE 5.4 SoC

Key specifications

Cost optimal, high performance chassis:
- Arm® Cortex®-M33 (96 MHz), built in BLE controller
- Full featured BLE 5.4 & pre-spec ULL HID over ISoC
- CAN-FD, LIN & SMIF w/XIP for external Flash
- Integrated PA with 10 dBm RF out
- Secure boot & secure execution environment

Performance
- Sub-5.5 mA Tx/Rx LE at 0 dBm
- –98 dBm LE Rx sensitivity*
- 4.5 uA for deep sleep with 64 KB retention

Packages
- 6x6 QFN-56 with 2-layer design support



SMT Package
14.5 x 19 x 1.95 mm

Software and Ecosystem

amazon sidewalk · freeRTOS · Zephyr · Works with Apple Find My

- AIROC Bluetooth stack
- MCU middleware (Graphics, drivers, ML)

Smart Peripherals

- SPI or UART
- I2C or SPI
- UART or I2C
- SMIF/SPI With encrypted XIP
- I2S (w TDM Mode)
- 2x PDM
- CAN-FD
- 1x 11b ADC (Sigma Delta)
- 7x TCPWM
- 2x 32-bit Timers
- 7x 16-bit Timers
- Watch Dog Timer
- 32x GPIO (2 OVT)

App System

Arm® Cortex® M33 96 MHz

32k cache	1kbit-eFuse
256K RAM	64 KB ROM

BLE System

Arm® Cortex® M33 48 MHz

96 KB RAM	448 KB ROM

- RX-Chain
- TX-Chain
- Baseband
- MAC

Security

Cryptography HW	TRNG

- Secure boot

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CYW20829: Full-feature BLE 5.4 MCU with longe range

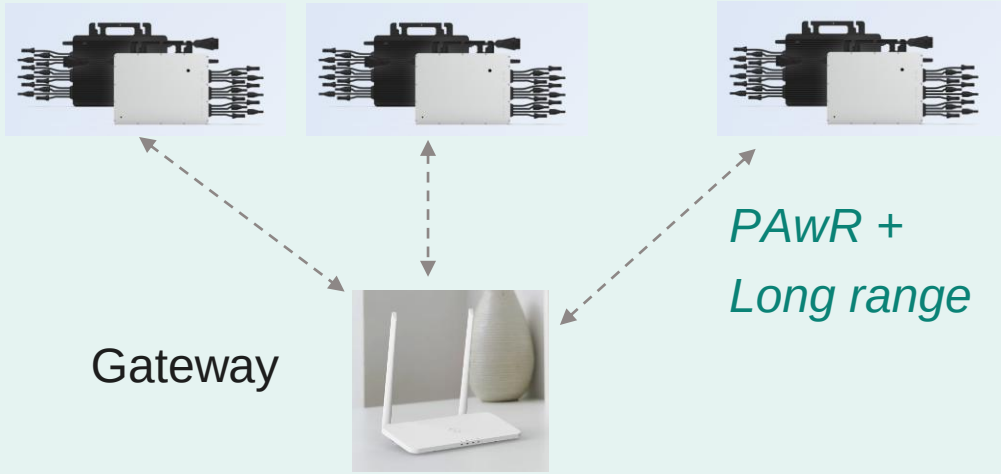
20829

Product Overview

✓ **Industry's best range and noise immunity**	– Measured **max. 2.3km range** without ePA – Tx output power of +10dBm – Best Rx blocker for noise immunity
✓ **Future proof your designs and unlock new use cases with Bluetooth LE 5.4**	– Supports all Bluetooth LE features up to 5.4 – Periodic Advertisement with Response (PAwR)
✓ **Reduce system cost with highly integrated MCU and "right sized" external flash**	– Dedicated M33 application core @96 MHz with Generous 256KB SRAM – CAN-FD, and only single crystal needed
✓ **Longer battery life with low power connection**	– Best in class packet rate leading to less retransmissions – Low active (Rx/Tx) and deep sleep currents
✓ **No dongle for ultra low latency HID**	– Average 1 msec per connection

Unlock new use cases in industrial, retail, smart home

Microinverter nodes: 20~100+ nodes



Use cases for LE Long Range and PAwR

- Electronic Shelf Labeling
- Smart Home
- Asset tracking
- Industrial sensor network
- Solar farms

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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

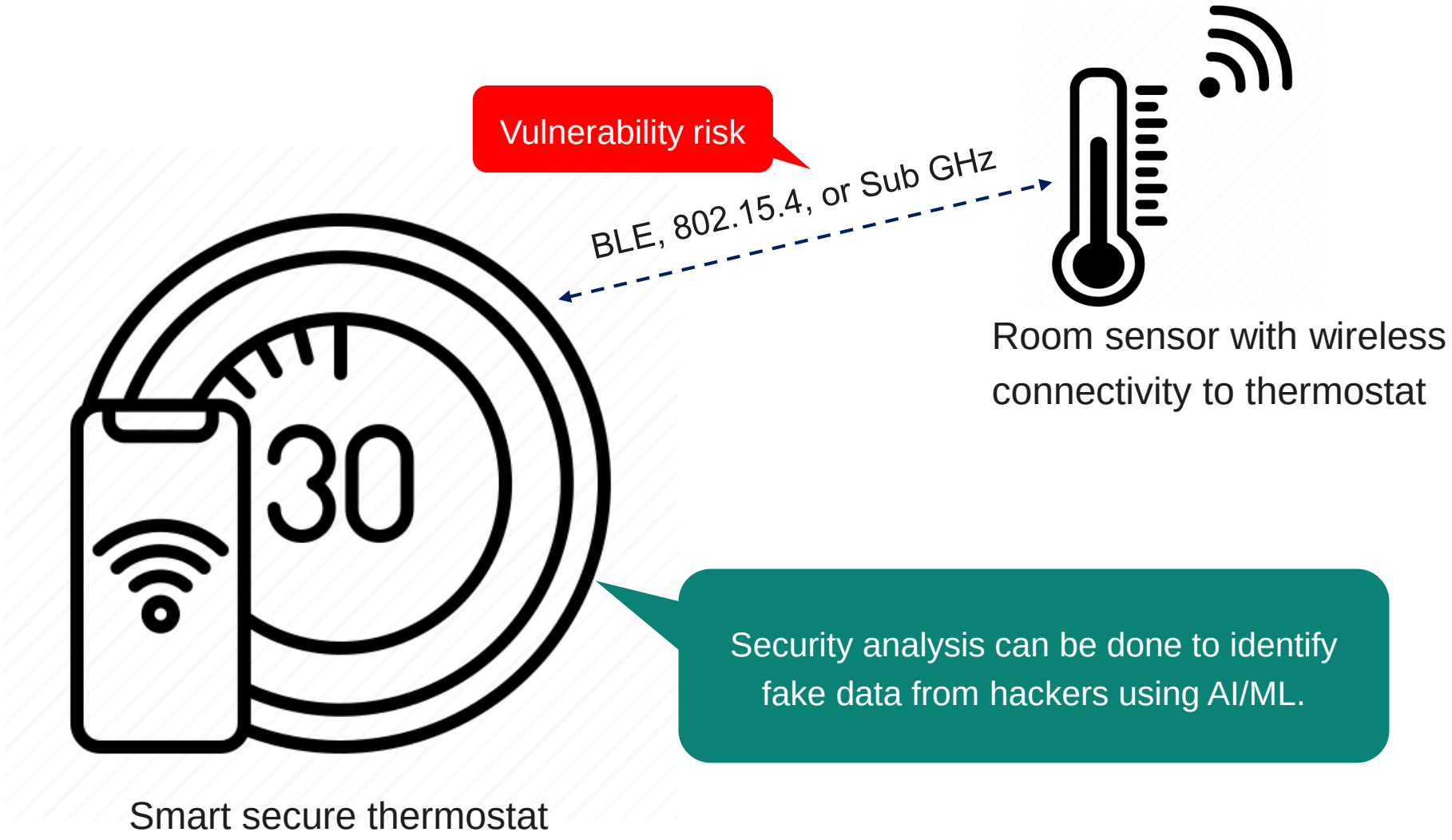
- Personal safety
- Invaded privacy
- Disrupted services

Potential impacts on brands

- Reputation damage
- Financial loss
- Liability

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Security monitoring and analysis to address risks from sensors



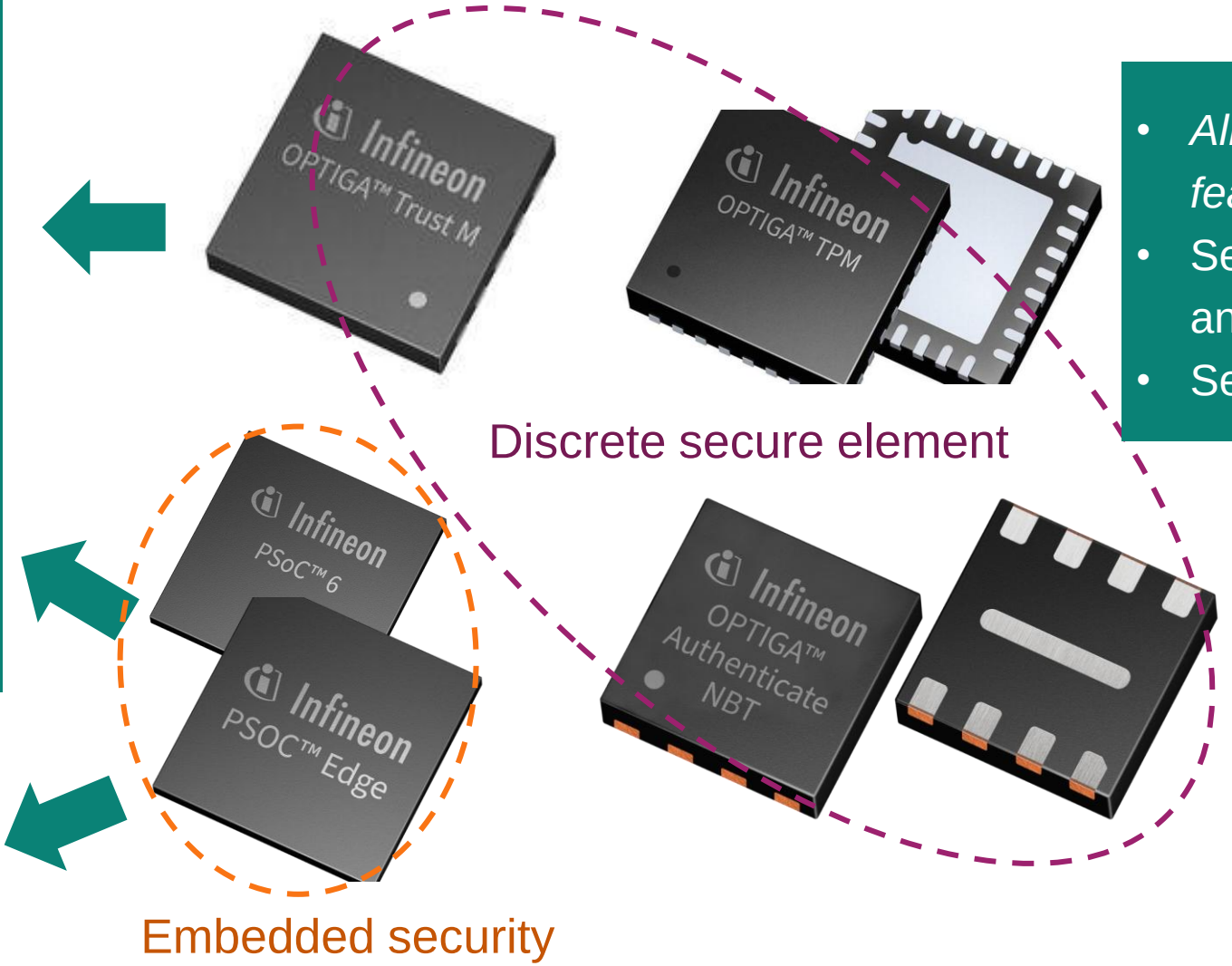
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IFX offerings for secure thermostats in a secure system

Trust M features:

- Secure boot
- Hardware security
- Secure firmware updates
- Authentication
- Data encryption
- Lifecycle management

- Security monitoring and analysis

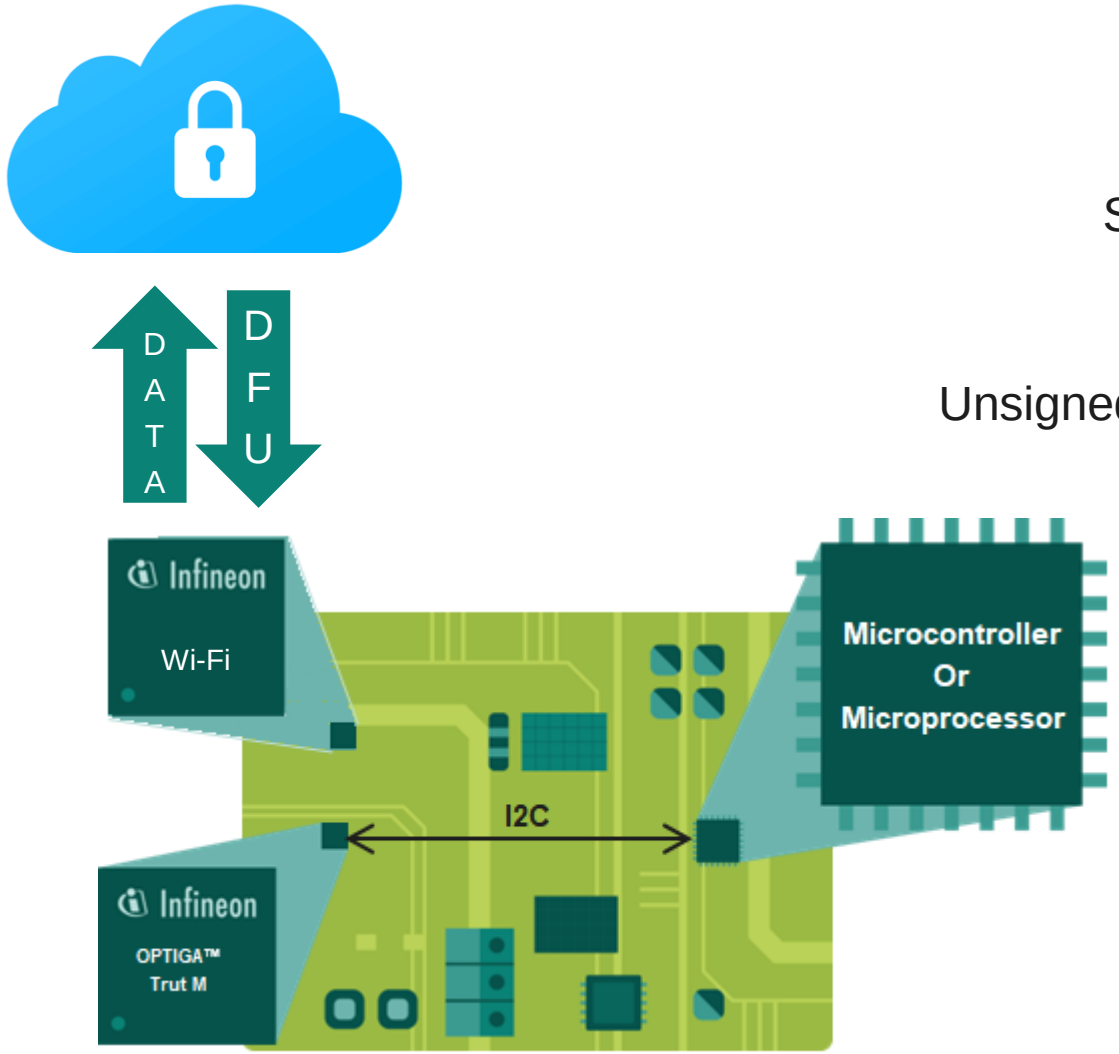


- *All Trust M features +*
- Secure cloud and networks
- Secure storage

- Secure update
- Authentication
- Secure commissioning

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Data encryption and secure DFU using OPTIGA Trust M



Thermostat with hardware security

	Unsecure HW	Secure HW
Signed/verified FW	Fail to run	Secure
Unsigned/unconfirmed FW	Unsecure	Fail to run

Data

	Unsecure HW	Secure HW
Data	Unsafe data communication	Data encrypted and secure

(Same scenario applies to embedded security with PSOC™ Edge)

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OPTIGA™ Trust M
High-end security solution for IoT



Main Features

- Based on CC EAL 6+ certified HW
- Secured IoT device identity (x.509 cert) injected in CC certified facility
- Flexible customization (e.g. PKI)
- State-of-the-art cryptography

Typical Use Cases

- Secured cloud authentication
- Secured cloud communication
- Secured Software Updates
- IP Protection
- … and more!

Host compatibility

- Cortex M4: XMC4xxx, PSOC 6x
- Cortex M0: XMC1xxx family
- SoC
- OS: Linux, Zephyr OS, FreeRTOS

Tools and support

- Open Source framework (MIT)
- NDA-free application notes and code examples
- Modus Toolbox™ support
- Development kits

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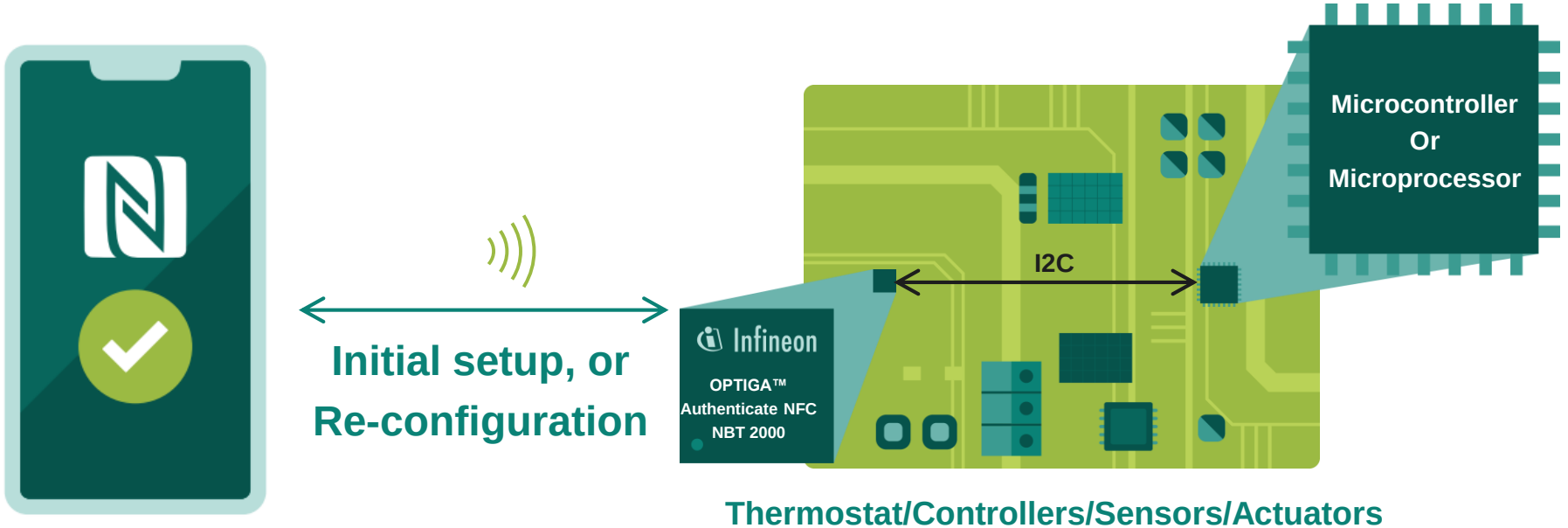
The right combination of MCU and dSE enables system design with the right modularity and efficiency

Security features	EPC 1 MCU Minimum MCU Requirements CRA/RED PSA L1v2	+ dSE	EPC 2 MCU Additional wireless connectivity security services | SESIP/PSA L2	+ dSE	EPC 3 MCU Hardened Crypto and Fault, Glitch mitigation SESIP/PSA L3	+ dSE	EPC 4 MCU Hardware isolated, lockstep Secure Enclave (SE) | SESIP/PSA L3+SE	+ dSE
Cryptography	✓	+	✓	+	✓	+	✓	+
Secure Boot	✓		✓		✓		✓	
Secure FW Update	✓		✓		✓		✓	
Processing isolation	✓		✓		✓		✓	
Compliance with CRA/RED	✓		✓		✓		✓	
Prebuilt security stack with secured key storage		+	✓	+	✓	+	✓	+
Physical glitch hardening					✓		✓	
Security fault management system					✓		✓	
Hardware isolated Secure Enclave		+		+		+	✓	+
Pre-configured credentials		+		+		+	✓	+
Value-adds (FIPS, TPM, NFC, Payment, …)		+		+		+	✓	+
Late-stage provisioning, machine ID, and key injection in secured environment		+		+		+		+
High-security anti-cloning and device identity protection		+		+		+		+

dSE = discrete Secure Element

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Devices serveices using OPTIGA Authenticate NBT

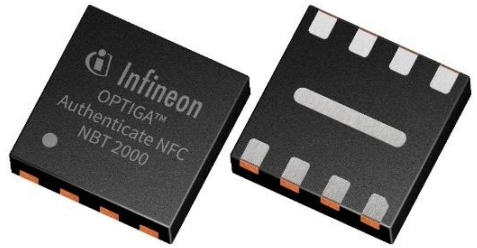


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OPTIGA™ Authenticate NBT

Feature Highlights

- **Superior security :** Infineon TEGRION™ hardware with next level of security
- **Open standards** : Java card OS and applets, I2C
- **Ample memory:** 8 KB user NVM
- **Ultra-fast data transfer:** 106 up to 848 Kbit/s contactless
- **Multi security options:**
  - Flexible password management commands
  - Asymmetric cryptography (NIST P-256) authentication with public key infrastructure (PKI) and certificates
  - AES-128 based symmetric crypto, with on-chip generated dynamic URL & CMAC verification online
- **Small antenna form factor:** 78 pF on-chip tuning capacitance
- **Chip-individual pre-provisioned certificate:** UID based, individual key-pair and certificate
- **Compliant & certified:** NFC Forum Type 4 Tag, Personal Health Device Communication (PHDC), GP T=1‘ (for I2C)



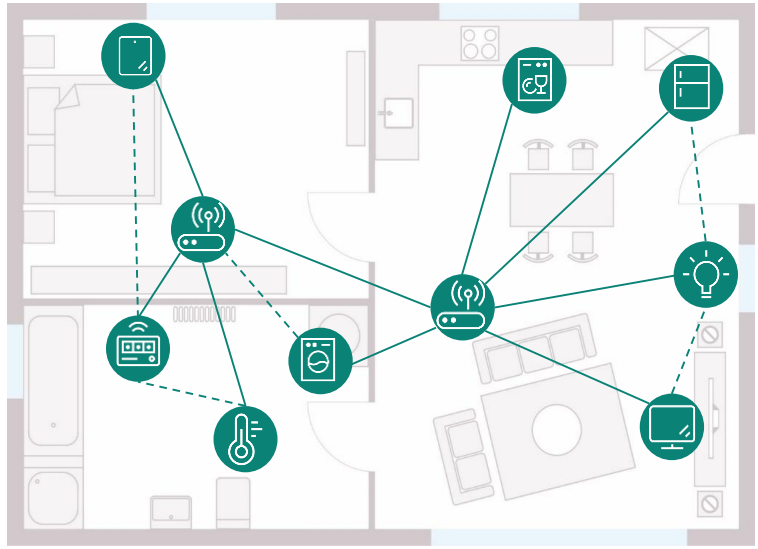
Package:
USON-8-8
2 mm x 2 mm x 0.55 mm

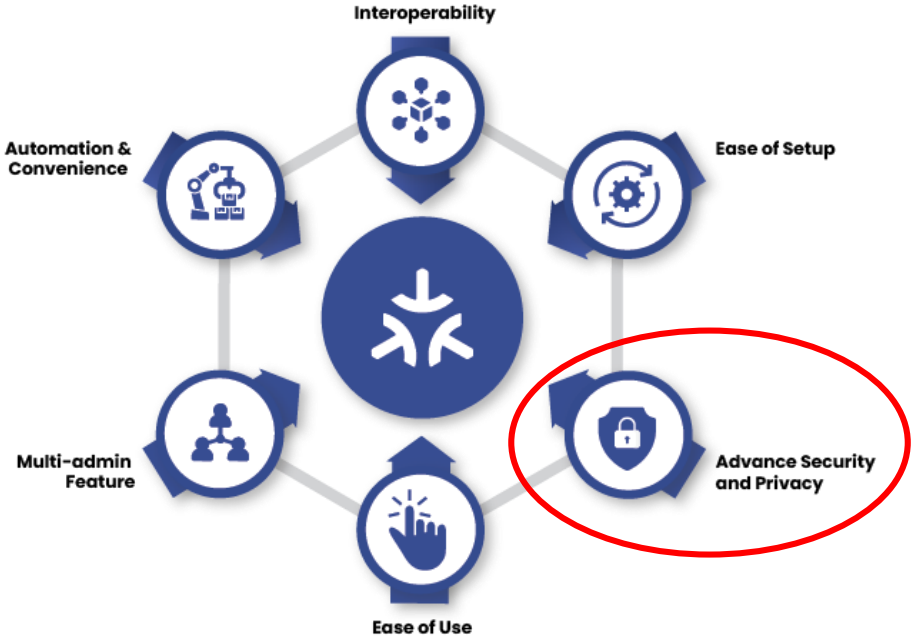
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Security and Matter go hand-in-hand

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

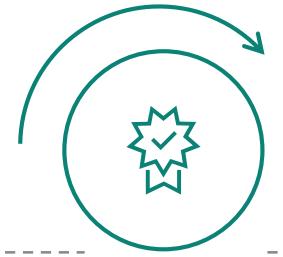
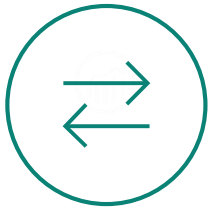




*Source: Connectivity Standards Alliance (CSA)

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OPTIGA™ Trust M MTR for Matter implementation

Challenges		Solution
Provisioning of Matter certificates		OPTIGA™ Trust M MTR is a pre-provisioned discrete SE which simplifies the process of adding Matter certificates to your devices.
Time to market		OPTIGA™ Trust M MTR allows to keep your existing design as it can be inserted into any MCU/SoC design
Flexibility		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.
Security of smart home devices		With its Common Criteria (CC) EAL6+ certified hardware, OPTIGA™ Trust M MTR can achieve consistent tamper-resistant protection supported by the Matter standard.

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OPTIGA™ Trust-M Matter Ready - Matter Provisioning

Main Features

- **Pre-provisioned** with root certificates and keys for secured provisioning of Matter certifications
- **Matter credential generation** and pre-injection in factory
- **CC EAL 6+ (high)** certified security controller
- **Cryptographic Toolbox** for SHA, ECC and RSA® Feature, AES, HMAC and Key derivation
- OPTIGA™ Shielded Connection
- Evaluation kit and product documentation available on **GitHub**

Availability

- Package: **USON-10 3mm x 3mm**
- MOQ: 4000
- Available now



Benefits

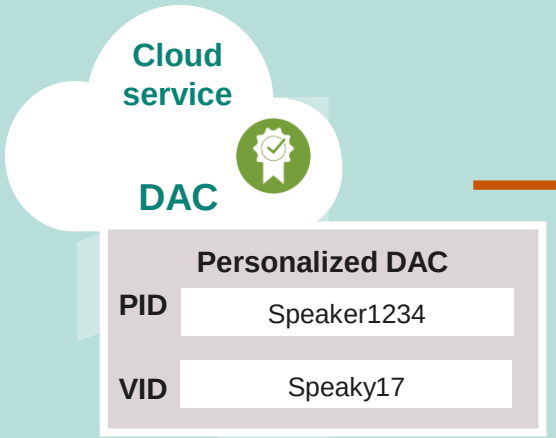
- **Full turnkey solution** for faster go to market
- **Easy provisioning of Matter certificates** into smart home devices
- Unique and immutable identity provisioned in a **CC-certified facility**
- **Extensive use case ranging** from Mutual Authentication, Secure Communication, Data Store Protection, Power Management, Secure Update, Platform Integrity Protection

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OPTIGA™ Trust M Matter Ready User Journey

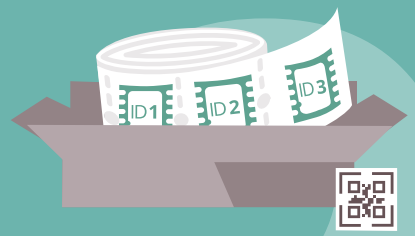
Pre-Production

- Create and configure personalized DAC using CSA certified PKI-as-a service
- Test on Eval kit & Prototypes



Production Order

Order reel(s) with pre-provisioned Infineon keys (DAC not included)



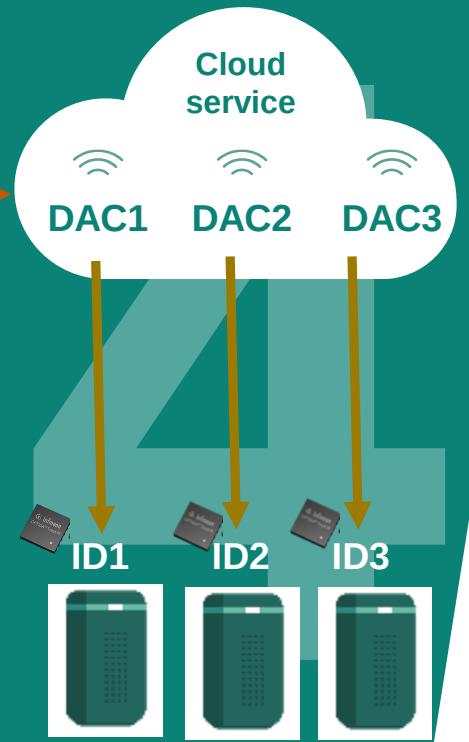
Claim

Claim the reel (device IDs) by scanning the QR code via cloud service



Transfer DAC*

Download personalized DAC from cloud and transfer into Trust-M at factory level



* DAC= Device attestation certificate

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Your 4-step CRA preparation plan



Understand

- CRA scope, definitions
- Exemptions
- Compliance requirements

Identify

- Affected products
- Components
- Dependencies (build SBOM)

Assess

- Gaps and risk analysis vs CRA Annex I/II
- Plan mitigations

Implement

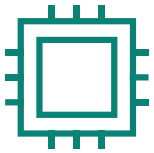
- Security-by-design
- Vulnerability management
- CE documentation, security tests

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How Infineon can help with CRA compliance



- **Security-by-design:** Infineon security products have this as a core requirement
- **Keys and certificates** provisioned at Infineon's secured, Common Criteria-certified site



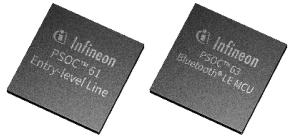
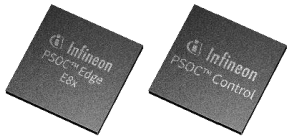
- **Security solutions for CRA compliance:** best-fit security solutions to meet CRA security outcomes from a broad range of security products: microcontroller, wireless MCU, discrete secure element, secure memory
- **Software tools:** Infineon's software tools and development platforms facilitate secure development, such as ModusToolbox™, Edge Protect Security Suite
- **Third-party certification:** independent evaluation and certification for standards, such as SESIP, CC, PSA-certified
- **Security lifecycle support for manufacturers:** to address the full product lifecycle, incl. risk assessment, vulnerability management, and reporting.
- **Evaluation platforms:** providing evaluation boards, reference designs, and software/hardware trainings to support design



- **Active in EU CRA standardizations**: contributing and leading EU standardization working groups in CENELEC
- **Decades-long expertise:** knowledge of regulatory requirements and variance of CRA compliance requirements
- **Training support:** Infineon provides resources like webinars to help customers understand and prepare for CRA
- **Implementation collaterals:** security-specific resources, such as, product documentation, security guidance manuals

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Infineon products mapping across (indicative) CRA category**
subject to device's risk-assessment

Secured Memory DICE-based, secured logging, secured boot	Edge Protect Category (EPC)*				Discrete Secure Element Hardware Root-of-Trust
	EPC 1 baseline secured boot/ update, logging readiness	**EPC 2** hardened wireless security services	**EPC 3** Hardened accelerated crypto, glitch mitigation	**EPC 4** Hardware isolated, lockstep Secure Enclave	
SEMPER™ Secure	PSOC™ 61 PSOC™ 62 PSOC™ 63 with BLE AIROC™ CYW20829 AIROC™ CYW5557x AIROC™ CYW5551x	PSOC™ Edge8x EPC2 PSOC™ Control C3 EPC2 AIROC™ CYW5591x	PSOC™ Control C3 Performance Line	PSOC™ Edge8x EPC4	OPTIGA™ TPM OPTIGA™ Trust M standard OPTIGA™ Trust MTR OPTIGA™ Trust M - Express
					
PSA L1v1	PSA L1v2	SESIP L2 or PSA L2	SESIP L3 or PSA L3	SESIP/PSA3 + L4 iSE	Common Criteria
✓ **Important Class I** ✓ **Default (low risk)**	✓ **Important Class I** ✓ **Default (low risk)**	✓ **Important Class I** ✓ **Default (low risk)**	✓ **Important Class II** ✓ **Important Class I** ✓ **Default (med. risk)**	✓ **Important Class II** ✓ **Important Class I** ✓ **Default (med. risk)**	✓ **Critical** ✓ **Important Class II** ✓ **Important Class I** ✓ **Default (high risk)**

*More information on Infineon's Edge Protect Category here, https://www.infineon.com/promo/edge-protect
**Disclaimer: this is preliminary guidance and subject to changes based on CRA harmonized standards (in-development), CRA (future) implementation Acts, and any EU Commission- or ENISA- issued CRA guidance. For accuracy kindly refer to EU Commission resources on CRA.

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Choosing the right security controller for your CRA device

PSOC™ Edge 8x "secured compute for Edge-AI"

- Secured boot with protected root of trust and cryptographic verification.
- Hardware cryptography accelerators (e.g., AES, SHA, ECC) and TRNG.
- Secured lifecycle states and controlled debug; anti-rollback counters.
- Trusted execution capabilities (e.g., memory protection, privilege separation).
- OTA update enablement with authentication and integrity checks.

OPTIGA™ TPM "platform integrity & attestation"

- Ease of provisioning and lifecycle management with SE
- Secured by design/default with TCG 2.0-compliant TPM; measured boot with PCRs; remote attestation.
- Strong key storage and crypto operations offload.
- Device identity anchored in hardware root-of-trust. Support for secured communication (TLS).
- Anchor SBOM integrity via sealed hash.

OPTIGA™ Trust M "IoT security made easy"

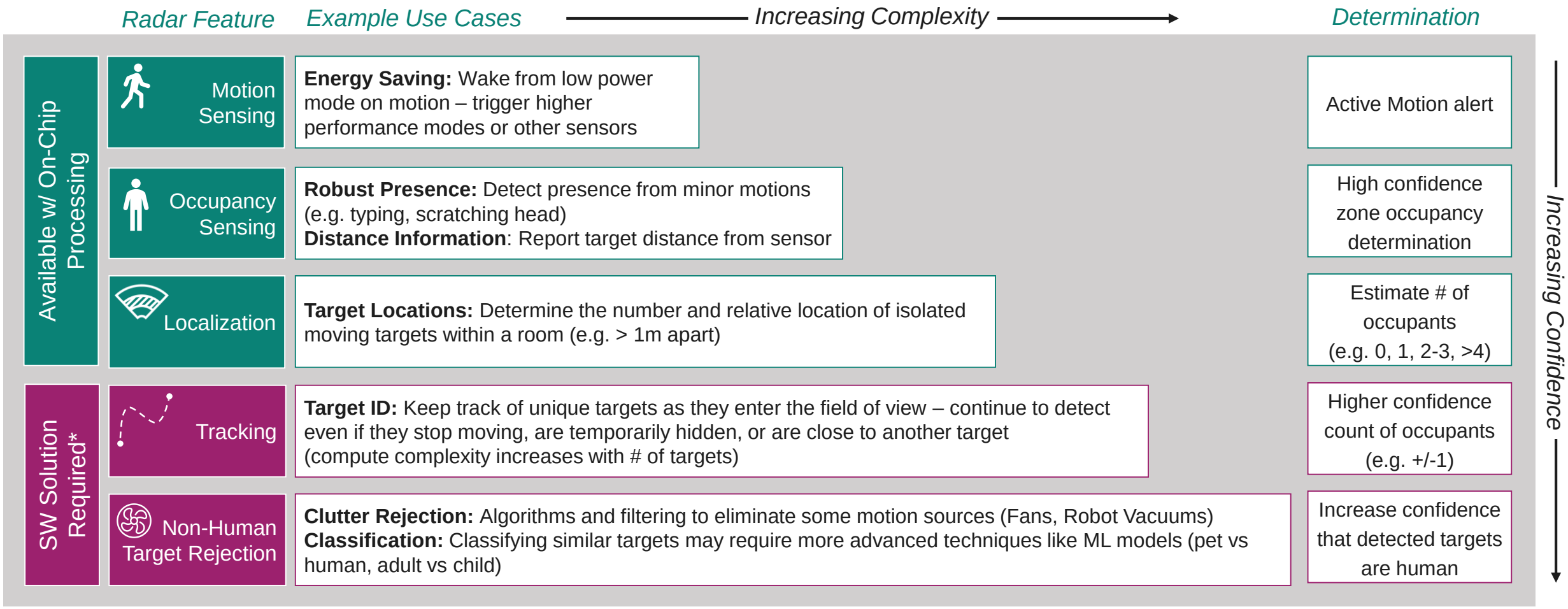
- Secure Element (SE) with ECC, symmetric crypto, secured key storage.
- Trust M Express: pre-provisioned certificates to accelerate cloud onboarding and manufacturing.
- Offload TLS mutual authentication; protects credentials from firmware exposure.
- Confidentiality and integrity for keys/operations- supports lightweight integrity checks.

... to enable EU CRA Security outcomes

- Security by design/default, secured update, integrity protection, documentation-friendly features.
- Integrity and authenticity of platform state; secured credentials; supports logging and incident response posture.
- Strong device identity, secured communication, simplified provisioning and update pathways.

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Infineon's XENSIV™ 60GHz CMOS Radar Sensor for Indoor Occupancy and People Counting



*Infineon has developed some reference algorithms for clutter rejection (fans, robot vacuums) and tracking (3 people), but may require use-case specific modification or custom solutions depending on customer requirements

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Highly innovative 60GHz CMOS Radar system | BGT60CUTR13AiP
Introducing Infineon‘s Next Gen Radar technology



BGT60CUTR13AiP

Extended range dection up to >15m boresight
- >10m at +/- 75° (higher RF power)

Optimized for reduced BOM cost
- Small device size and integrated OSC and LDOs

Low Power Consumption via embedded PMU
- <1mW in ULP / <10mW in Range Doppler Mode

Integrated Processing (Doppler, AoA, ...)
- Detection and localization of moving targets

On-chip clutter rejection and zoning
- Advanced processing enabled on host MCU

Scalable for any performance requirements
- Modular design to support different antenna configurations

XENSIV™ barometric pressure sensor portfolio



Waterproof: Fully functional 50 m under water for 1 hour (IPX8)

Protection against water, dust and humidity

- Small size
- Low energy consumption
- Excellent temperature stability
- High sensitivity
- Robustness

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XENSIV™ microphones portfolio & roadmap

Single Backplate
Sealed Dual Membrane

Digital

IM69D127

3.6 x 2.5 x 1.0 mm

SEN	-34 dBFS
AOP	127 dBSPL
SNR	69 dB(A)
IDD	820/300 µA
CF	40 Hz

Small size

IM72D128

4 x 3 x 1.2 mm

SEN	-36 dBFS
AOP	128 dBSPL
SNR	**72 dB(A)**
IDD	980/280 µA
CF	20 Hz

High SNR

IM69D128S

3.5 x 2.65 x 0.98 mm

SEN	-37 dBFS
AOP	128 dBSPL
SNR	69 dB(A)
IDD	**520/180 µA**
CF	30 Hz

Low power

IM72D128VV11

4 x 3 x 1.2 mm

SEN	-36 dBFS
AOP	128 dBSPL
SNR	**72 dB(A)**
IDD	**420/120 µA**
CF	**11 Hz**

High SNR, low power, low CF

IM73D122

4 x 3 x 1.2 mm

SEN	**-26 dBFS**
AOP	122 dBSPL
SNR	**73 dB(A)**
IDD	980/280 µA
CF	20 Hz

High sensitivity

IM70D122

3.5 x 2.65 x 0.98 mm

SEN	**-26 dBFS**
AOP	122 dBSPL
SNR	70 dB(A)
IDD	980/280 µA
CF	30 Hz

High sensitivity

IM69D128FV11

3.5 x 2.65 x 1.0 mm

SEN	-37 dBFS
AOP	128 dBSPL
SNR	69 dB(A)
IDD	**450/140 µA**
CF	**11 Hz**

Low power, low CF

Analog

IM70A135

3.5 x 2.65 x 1.0 mm

SEN	-38 dBV
AOP	135 dBSPL
SNR	**70 dB(A)**
IDD	170/70 µA
CF	37 Hz

Small size

IM73A135

4 x 3 x 1.2 mm

SEN	-38 dBV
AOP	135 dBSPL
SNR	**73 dB(A)**
IDD	170/70 µA
CF	20 Hz

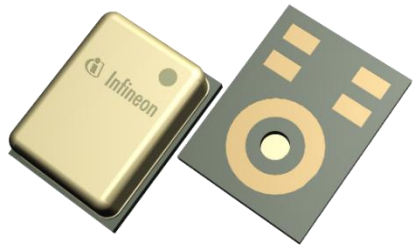
High SNR

IM68A130

3.35 x 2.5 x 0.98 mm

SEN	-38 dBV
AOP	130 dBSPL
SNR	68 dB(A)
IDD	110 µA
CF	10 Hz

Low CF



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Serial NOR Flash portfolio innovations

Std SPI and HYPERFLASH™

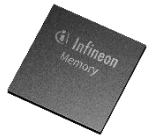


Tech: MB65, FG65
Density: 64Mb to 1Gb
Volt: 3.0V, 1.8V
Interface:
- QSPI (80MB/s)
- HYPERBUS (333MB/s)

ASIL-B (FMEDA)
AEC-Q100 Grade 1

+ Safety

SEMPER™



Tech: MB45
Density: 256Mb to 4Gb
Volt: 3.0V, 1.8V
Interface:
- QSPI (102MB/s)
- xSPI (400MB/s)

Endurance flex architecture
ASIL-B compliant
AEC-Q100 Grade 1

+ Security

SEMPER™ Secure



Tech: MB45
Density: 128Mb to 512Mb
Volt: 3.0V, 1.8V
Interface:
- QSPI (102MB/s)
- xSPI (400MB/s)

ASIL-B compliant
Hardware root-of-trust
Secured transactions
AEC-Q100 Grade 1

+ Real-time XiP

SEMPER™ X1

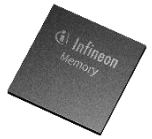


Tech: eCT40
Density: 144Mb to 576Mb
Volt: 1.1V LPDDR4 and 3.3V QSPI
Interface:
- LPDDR4 (3.2GB/s) and QSPI (50MB/s)

ASIL-D ready
Read While Write (RWW)
AEC-Q100 Grade 1, T_J = 150°C

Compact

SEMPER™ Nano



Tech: MB45
Density: 256Mb
Volt: 1.8V
Interface: QSPI (52MB/s)
Tiny footprint

Low Power

ULTREON™ RRAM

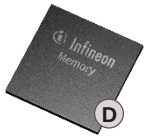


Sampling: NOW!

Tech: 28nm RRAM
Density: 8Mb to 64Mb
Volt: 3.0V, 1.8V, 1.65-3.6V
Interface: QSPI (104MB/s)
Read While Write (RWW)
3x lower read energy per MB
5x lower write energy per MB

Performance

SEMPER™ F1



Sampling: 2026 (256Mb)

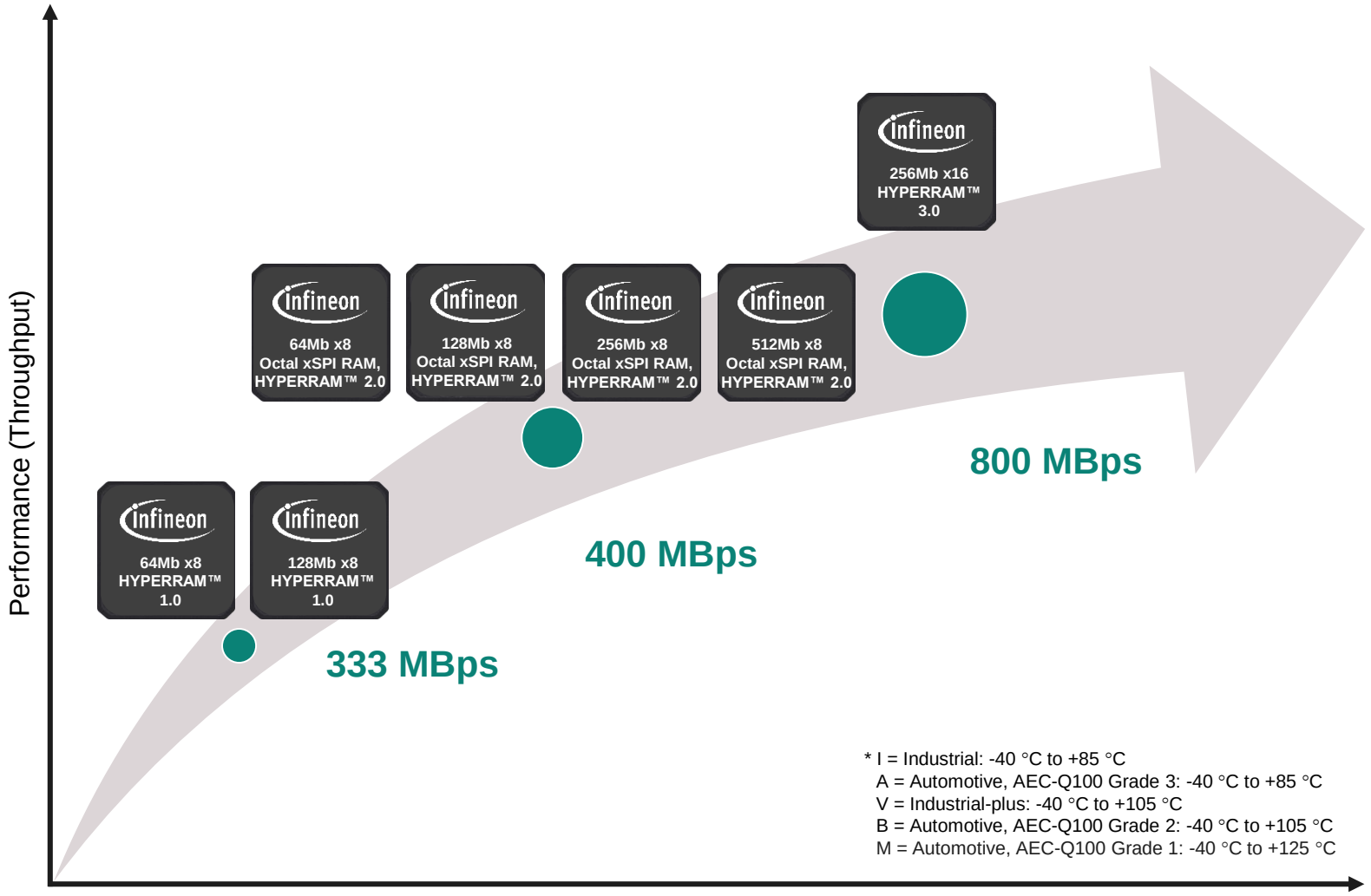
Tech: FG48
Density: 32Mb to 512Mb
Volt: 3.0V, 1.8V
Interface:
- QSPI (104MB/s)
- xSPI (400 MB/s)

ASIL-D Systematics
4KB Sector size
AEC-Q100 Grade 1

S = Sampling
D = Development

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HYPERRAM™ family overview

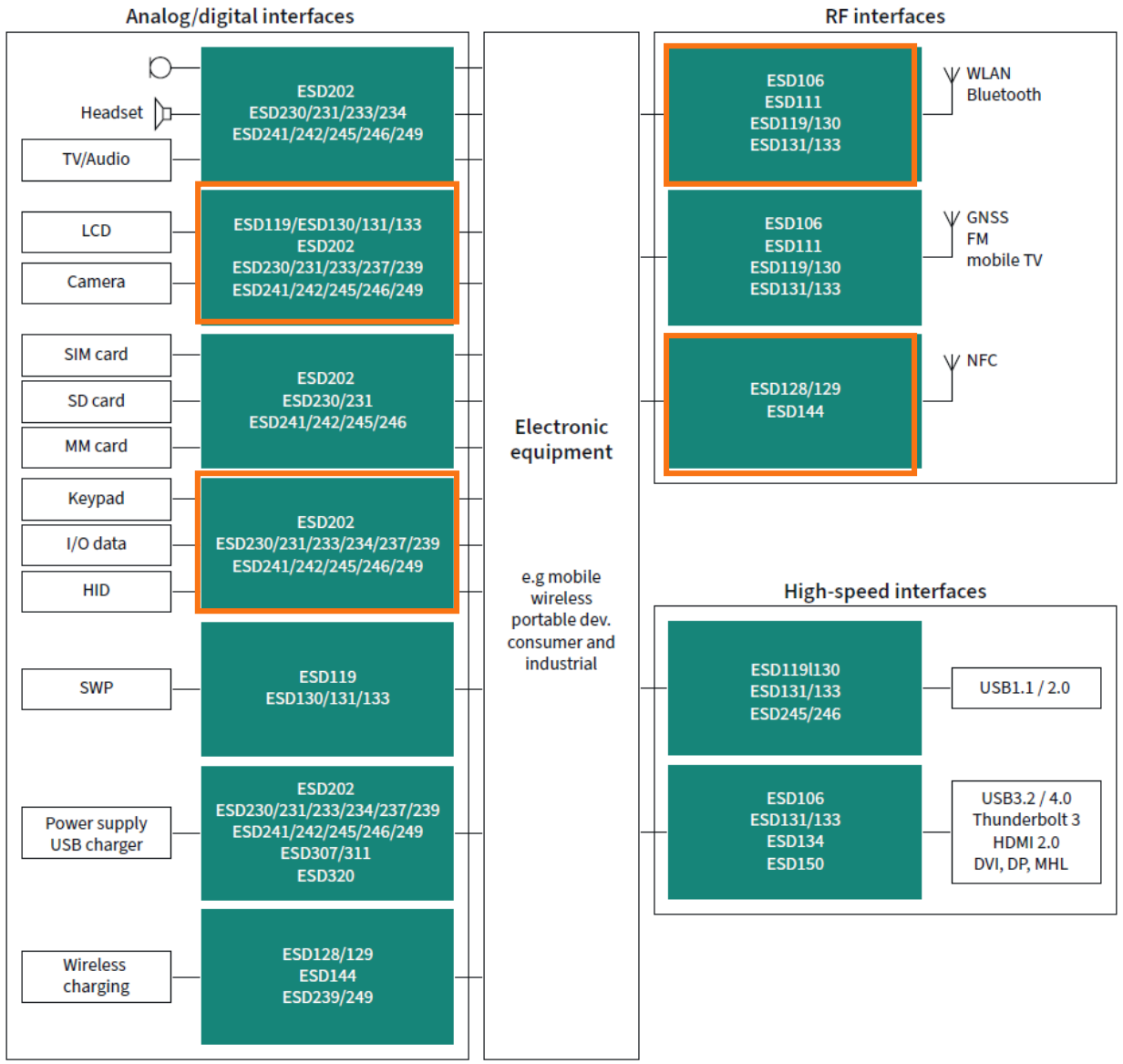


* I = Industrial: -40 °C to +85 °C
A = Automotive, AEC-Q100 Grade 3: -40 °C to +85 °C
V = Industrial-plus: -40 °C to +105 °C
B = Automotive, AEC-Q100 Grade 2: -40 °C to +105 °C
M = Automotive, AEC-Q100 Grade 1: -40 °C to +125 °C

HYPERRAM ™ family		2.0	2.0	2.0	2.0	3.0
Density		64Mb	128Mb	256Mb	512Mb	256Mb
Data Bus Width		x8	x8	x8	x8	x16
Voltage	1.8 V	✓	✓	✓	✓	✓
	3.0 V	✓	✓			
Interface	Octal xSPI	✓	✓	✓	✓	
	HYPERBUS™	✓	✓	✓	✓	
	HYPERBUS™ Ext. I/O					✓
Frequency	166 MHz	✓	✓			
	200 MHz	✓	✓	✓	✓	✓
Low power modes	Hybrid Deep Sleep	✓		✓	✓	✓
	Deep Power Down	✓		✓	✓	✓
Reset	Hardware	✓	✓	✓	✓	✓
Package	24-FBGA	✓	✓	✓	✓	
	49-FBGA					✓
Temperature*	Industrial	✓	✓	✓	✓	✓
	Industrial Plus	✓	✓	✓	✓	✓
	Auto Grade-1	✓	✓	✓	✓	✓
	Auto Grade-2	✓	✓	✓	✓	✓
	Auto Grade-3	✓	✓	✓	✓	

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Interface Protection with Discrete ESD



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Low Capacitance ESD

Low capacitance ESD protection diodes for high speed and RF interfaces

Product	Application	V_{RWM} [V]	ESD [1] [kV]	V_{CL} [2] [V_{CL}] @ [A]	R_{dyn} [3] [Ω]	I_{PP} [4] [A]	V_{CL} [5] [V]	C_T [6] [pF]	Protected lines	Package
ESD106-B1-W0201	High-speed interfaces	±5.5	±12	±16 @ ±8 ±25 @ ±16	1.1	1.5	10	0.13	1	WLL-2-3
ESD111-B1-W0201	High linearity requirement	±5.5	±11	±19 @ ±8 ±30 @ ±16	1.29	2.0	11	0.12	1	WLL-2-3
ESD150-B1-W0201	USB 4, USB 3.x SuperSpeed"	±3.3	±12	±4.2 @ ±8 ±5.4 @ ±16	0.16	3.0	3.8	0.16	1	WLL-2-3
ESD119-B1-W01005 ESD130-B1-W0201	High-speed interfaces	±5.5	±25	±20 @ ±16 ±31 @ ±30	0.8	1.0 2.5	11 14	0.3	1	WLL-2-2 WLL-2-1
ESD128-B1-W0201 ESD129-B1-W01005	NFC-RF	±18	±15	±32 @ 16	0.85	1.0	18.5	0.3 0.25	1	WLL-2-1 WLL-2-2
ESD131-B1-W0201 ESD133-B1-W01005	High-speed interfaces	±5.5	±20	±8.5 @ ±8 ±13 @ ±16	0.6 0.56	3.0	5.5	0.25 0.23	1	WLL-2-3 WLL-2-2
ESD144-B1-W0201	NFC-RF	±18	±15	±13 @ ±16	0.6	2.0		0.25	1	WLL-2-3
ESD5V5U5ULC	USB2.0-HS, V_{CC}	+5.5	±25	8.9 @ 16 11.5 @ 30	0.2	6.0	10.0	0.45	4	SC74

1) Electrostatic discharge as per IEC61000-4-2, contact discharge
2) TLP clamping voltage for 100 ns pulse length
3) Dynamic resistance (ON-resistance) evaluated with TLP measurement (100 ns pulse length)
4) Maximum peak pulse current according to IEC61000-4-5 (8/20 µs)
5) Clamping voltage at $I_{PP,max}$ according to IEC61000-4-5 (8/20 µs)
6) Typical capacitance at 1 MHz (unless specified), 0 V, I/O vs. GND

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General Purpose ESD Devices

ESD protection diodes for general purpose interfaces

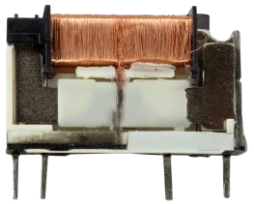
Product	Application	V_{RWM} [V]	ESD [1] [kV]	V_{CL} [2] [V_{CL}] @ [A]	R_{dyn} [3] [Ω]	I_{PP} [4] [A]	V_{CL} [5] [V]	C_T [6] [pF]	Protected lines	Package
ESD202-B1-W01005	Gen. purpose	±5.5	±16	±13 @ ±16 ±17 @ ±30	0.2	3	12	6.5	1	WLL-2-2
ESD230-B1-W0201	Gen. purpose	±5.5	±15	±13 @ ±16	0.22	3	14	7	1	WLL-2-1
ESD231-B1-W0201	Gen. purpose	±5.5	±30	±12 @ ±16 ±16 @ ±30	0.3	2 9	8 10	3.5	1	WLL-2-1
ESD233-B1-W0201	Gen. purpose	±5.5	±20	±13 @ ±16	0.2	3	12.5	33	1	WLL-2-1
ESD234-B1-W0201	Gen. purpose	±5.5	±20	±13 @ ±16	0.2	3	12.5	56	1	WLL-2-1
ESD237-B1-W0201	Gen. purpose	±8	±16	±13 @ ±16 ±17 @ ±30	0.21	3	12	7	1	WLL-2-1
ESD239-B1-W0201	Gen. purpose	±22	±16	±27 @ ±16	0.27	3		3.2	1	WLL-2-3
ESD241-B1-W0201 ESD242-B1-W01005	Gen. purpose	±3.3	±15	±6 @ ±16	0.1	4		6.5 6	1	WLL-2-3 WLL-2-2
ESD245-B1-W0201 ESD246-B1-W01005	Gen. purpose	±5.5	±15	±7.5 @ ±16	0.1	5		5.8 5.5	1	WLL-2-3 WLL-2-2
ESD249-B1-W0201	Gen. purpose	±18	±16	±23 @ ±16	0.27	3		4.2	1	WLL-2-3

1) Electrostatic discharge as per IEC61000-4-2, contact discharge
2) TLP clamping voltage for 100 ns pulse length
3) Dynamic resistance (ON-resistance) evaluated with TLP measurement (100 ns pulse length))
4) Maximum peak pulse current according to IEC61000-4-5 (8/20 µs)
5) Clamping voltage at $I_{PP,max}$ according to IEC61000-4-5 (8/20 µs)
6) Typical capacitance at 1 MHz (unless specified), 0 V, I/O vs. GND

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Infineon Solid State Isolators and Relays (iSSI)
Reliable, low power, fast switching





EMR

Legacy solution

- Proven in use
- Known reliability issues
- Higher Cost of Ownership

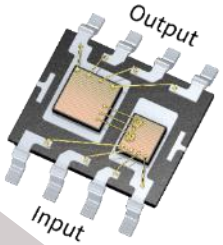


Optical SSR

Today's optical SSRs

- Faster switching (60 us)
- Higher reliability than EMR
- High Power Dissipation (SCR/TRIACS)
  - Requires heat sink
- https://www.infineon.com/ssr

Coreless transformer SSR





New CT energy transfer SSRs

- Provides **energy transfer**
- **Fastest switching** of output devices (< 10 us)
- **Protection features**
  - Overcurrent & overtemperature
- **Lower** power dissipation (up to 80% less)
  - **No** or smaller **heat sink** required
- Drive latest generation MOSFETs

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Infineon iSSI Product Family

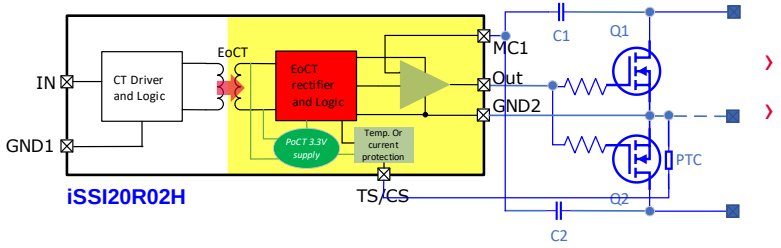
– There are 5 variants of the Infineon Solid State Isolator Family to meet customer specific application needs. 2x16-pin and 3x8-pin devices providing a selection of key value-added features.

Product Type	Protection Features	Fast- turn-on	Certification (planned)	Marking	Package
iSSI20R02H	OCP or OTP (PTC), DMC	No	IEC 60747-17, UL1577	I20R02	PG-DSO-8-66
iSSI20R03H	OCP, OTP (PTC)	No	IEC 60747-17, UL1577	I20R03	PG-DSO-8-66
iSSI20R11H	OCP or OTP (PTC)	Yes	IEC 60747-17, UL1577	I20R11	PG-DSO-8-66
iSSI30R11H	OCP, OTP (PTC), DMC	Yes	IEC 60747-17, UL1577	I30R11	PG-DSO-16-33
iSSI30R12H	OCP, OTP (diode), DMC	Yes	IEC 60747-17, UL1577	I30R12	PG-DSO-16-33

- OCP: Over Current Protection
- OTP: Over Temperature Protection
- DMC: Dynamic Miller Clamp

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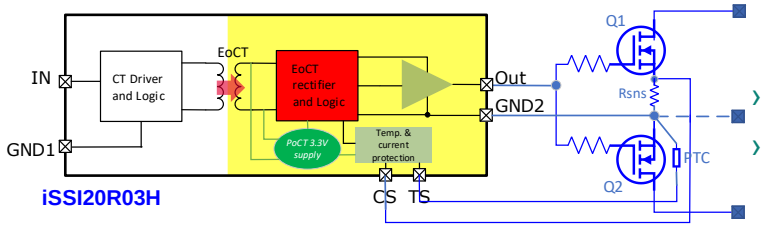
Infineon iSSI Isolators Family Overview:



iSSI20R02H

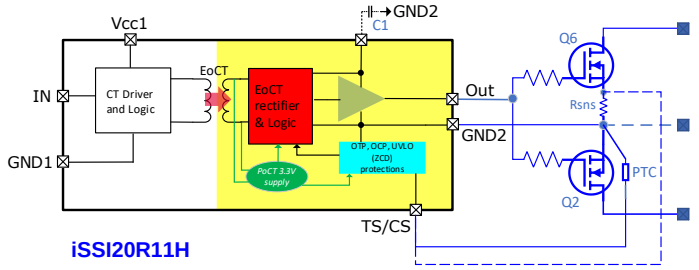
› Miller Clamp
› Combined TS/CS pins

Standard Turn on



iSSI20R03H

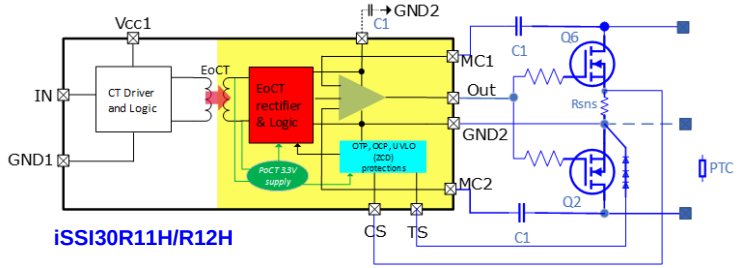
› No Miller Clamp
› Separate TS/CS pins



iSSI20R11H

› No Miller Clamp
› Combined TS/CS pins

Fast Turn on



iSSI30R11H/R12H

› Miller Clamp
› Separate TS/CS pins
› PTC sense (R11H)
› Diode Tsense (R12H)

Key Specifications									
Product ID	**Turn On**	**Package**	**V_{ISO}**	**V_{OTM}**	**UL1577**	**Vin range**	**Ioutcc Typ**	**Vout typ**	**features**	**Status**
iSSI20R0xH	Standard Turn On	DS08 300mil	5.7kV (rms)	8kV **IEC 60747-17**	✓	2,3V – 3,4V	175uA	13V (@Vin = 2,3V 15V @ Vin= 3,3V	TS/CS/ MC pin(s)	Production
iSSIx0R11/12H	Fast Turn On	DS08 /16 300mil	5.7kV (rms)	8kV **IEC 60747-17**	✓	2,3V – 3,4V (clamped)	400mA	13V (@Vin = 2,3V 15V @ Vin= 3,3V	OCP, OTP, D-Sense	Production

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iSSI value proposition to …

Total cost of ownership

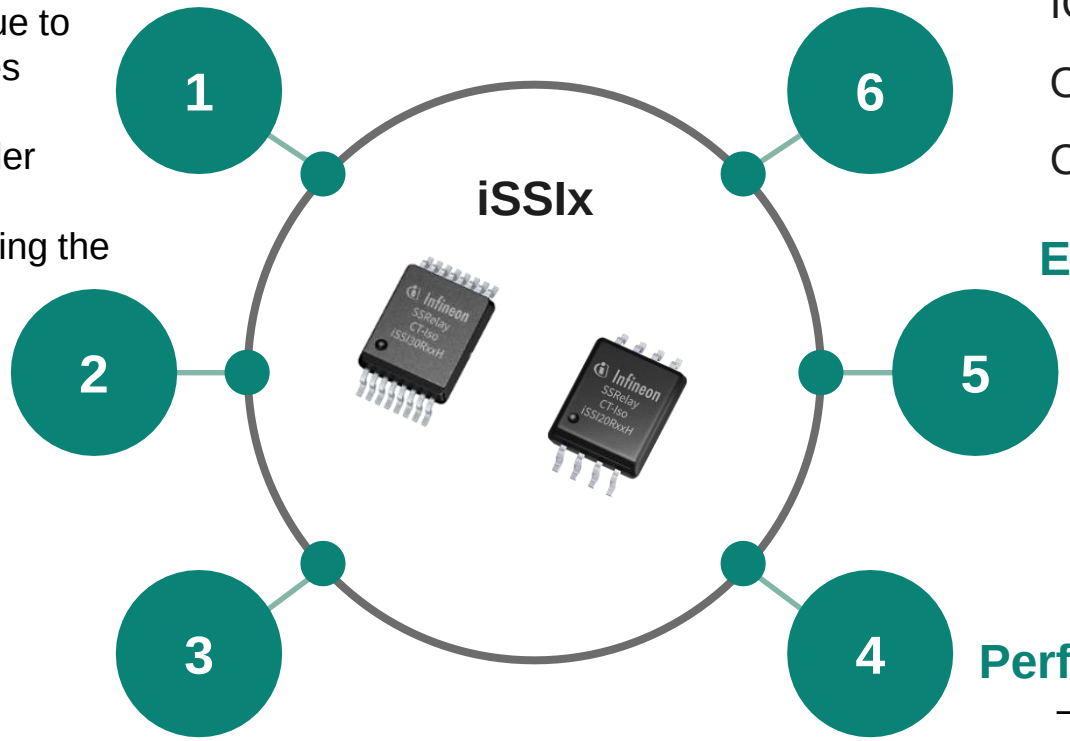
- In high use applications, maintenance, and downtime, costs are lower due to increased number of switch cycles
- Lower power dissipation leads to elimination of heat sink and smaller overall footprint
- Provides energy transfer eliminating the need for an isolated supply

Switch protection

- OCP
- OTP
- Miller Clamp
- Fast Turn On

Environmental conditions

- EMI Noise Immunity
- No arcing in harsh environments
- No position mounting issues
- Quiet operation, no click



Designed for IFX World Class Switches

IGBT

OptiMOS™

CoolMOS™

Efficiency

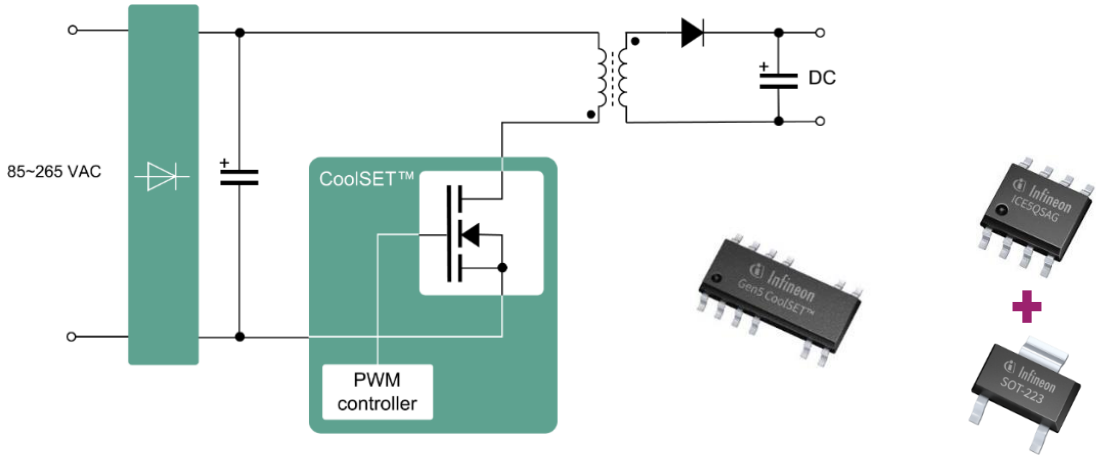
- Require very little input power to switch strong power loads
- Since relay does not have to energize a coil and physically open and close contacts, it actually consumes **75% less** power than EMR's

Performance & Reliability

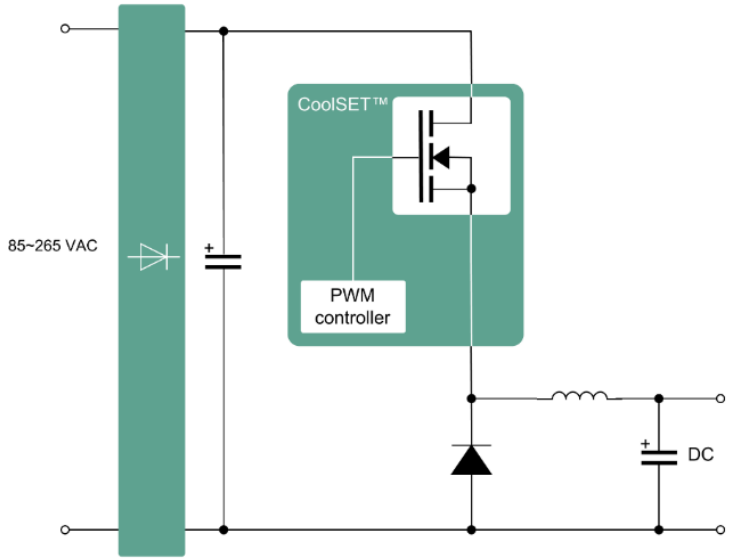
- Faster switching (much higher number of switching operations per minute)
- No bounce
- No degradation in DC switching
- 100x number of switch cycles over EMR

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Scalable Platform – From a Few Watts to 77W
High power delivery capability in DIP-7 and DSO-12 package

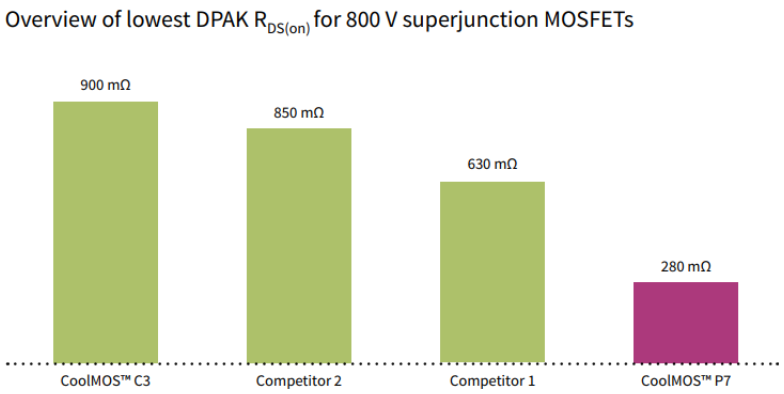


- Offline switch mode power supply
- Isolated and non-isolated Flyback topology
- Output power up to 42 W - Integrated
- >60 W with external MOSFET
- Support an output current of up to **700 mA in Buck**
- Robust **avalanche rugged CoolMOS™** inside





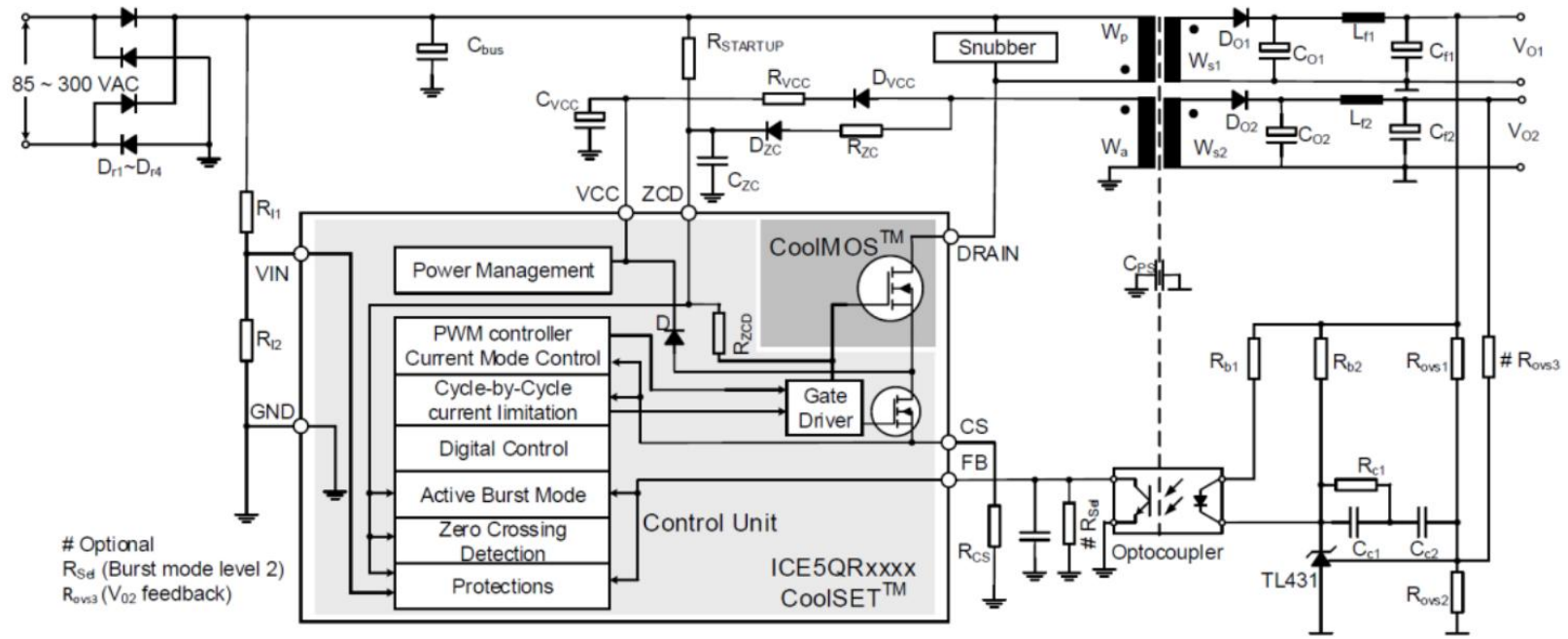
DSO12 - Mid 2023



800 V CoolMOS™ P7 sets benchmark in best-in-class DPAK $R_{DS(on)}$

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Overview of ICE5 Quasi-Resonant CoolSET™



› Integrated latest generation of avalanche rugged CoolMOS™ P7 700V/800V for increased performance

Package	$P_{out,max}$ 220 V_{AC}±20%	$P_{out,max}$ 85-300 V_{AC}
PG-DIP-7	27 W – 74 W	15 W – 41 W
PG-DSO-12	27 W – 77 W	15 W – 42 W

Note: Output power based on Ta=50°C and Tj=125°C under an open frame condition



PG-DIP-7



PG-DSO-12

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Gen. 5 quasi-resonant demo board availability

S/N	Part number	P_{out}	App note	Available @ ISAR
1	REF_5QR2270AZ_12W1	12 W	Internet	Yes
2	DEMO_5QR4770AG_15W1	15 W	Internet	Yes
3	DEMO_5QR4770AZ_16W1	16 W	Internet	Yes
4	DEMO_5QR4780AZ_16W1	16 W	Internet	Yes
5	DEMO_5QR2270AZ_24W1	24 W	Internet	Yes
6	DEMO_5QR2280AZ_24W1	24 W	Internet	Yes
7	DEMO_5QR1680AG_27W1	27 W	Internet	Yes
8	REF_5QR1070AZ_33W1	33 W	Internet	Yes
9	EVAL_5QR2270AZ_33W1	33 W	Internet	Yes
10	DEMO_5QR0680AZ_42W1	42 W	Internet	Yes
11	DEMO_5QR0680AG_42W1	42 W	Internet	Yes
12	DEMO_5QSAG_60W1	60 W	Internet	Yes

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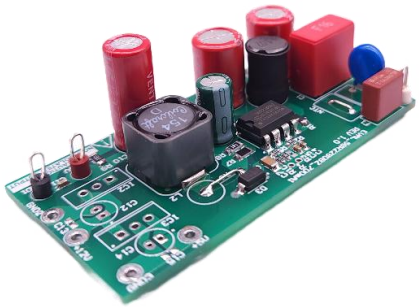
Gen5 fixed frequency demo board availability (1/2)

S/N	Part number	P_{out}	Output	Isolated	App note	Available @ ISAR
1	REF_5AR4770AG_3W1	3 W	5 V	Yes	Internet	Yes
2	EVAL_5BR3995BZ_BUCK1	5.4 W	18 V	No	Internet	Yes
3	EVAL_5BR4780BZ_450mA1	6.7 W	15 V	No	Internet	Yes
4	REF_5AR4770BZS_8W1	8 W	12 V, 5 V	Yes	Internet	Yes
5	EVAL_5BR2280BZ_700mA1	10.5 W	15 V	No	Internet	Yes
6	REF_5AR4770AG_13W1	13 W	12 V, 15 V	No	Internet	Yes
7	DEMO_5AR4770AG_14W1	14 W	15 V, 5 V	No	Internet	Yes
8	DEMO_5GR4780AG_14W1	14 W	15 V, 5 V	No	Internet	Yes
9	DEMO_5AR4780BZS_14W1	14 W	15 V, 5 V	No	Internet	Yes
10	DEMO_5AR3995BZ_14W1	14 W	15 V, 5 V	No	Internet	Yes
11	REF_5AR4770BZS_15W1	15 W	12 V	Yes	Internet	Yes
12	REF_5AR4770AG_15W1	15 W	12 V, 15V	Yes / No	Internet	Yes
13	REF_5BR4780BZ_15W1	15 W	15 V, 12 V, 5 V	No	Internet	Yes
14	REF_5BR3995BZ_16W1	16 W	15 V, 12 V, 5 V	No	Internet	Yes
15	REF_5BR3995CZ_16W1	16 W	12 V, 5 V, 5 V	Yes	Internet	Yes

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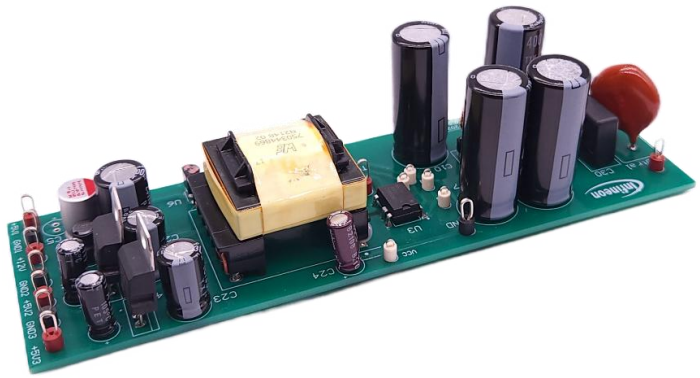
Gen5 fixed frequency demo board availability (2/2)

S/N	Part number	P_{out}	Output	Isolated	App note	Available @ ISAR
16	REF_5GSAG_18W1	18 W	12 V	Yes	Internet	Yes
17	DEMO_5GR2280AG_22W1	22 W	12 V, 5 V	Yes	Internet	Yes
18	REF_5GR2280AG_22W1	22 W	15 V, 12 V, 20 V	No / Yes / Yes	Internet	Yes
19	REF_5BR2280BZ_22W1	22 W	15 V, 12 V, 5 V	No / Yes / Yes	Internet	Yes
20	REF_5AR2280CZ_22W1	22 W	15 V, 12 V, 5 V	No / Yes / Yes	Internet	Yes
21	DEMO_5GR1680AG_27W1	27 W	12 V, 5 V	Yes	Internet	Yes
22	DEMO_5AR0680AG_44W1	44 W	12 V	Yes	Internet	Yes
23	DEMO_5AR0680BZS_44W1	44 W	12 V	Yes	Internet	Yes
24	DEMO_5ASAG_60W1	60 W	12 V, 5 V	Yes	Internet	Yes
25	DEMO_5GSAG_60W1	60 W	19 V	Yes	Internet	Yes









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2 Application introduction (definition, market potential, trends) 8

3 Application requirements & challenges and value proposition 11

4 Application block diagram and Infineon offering 14

5 Application offering details 17

6 **Get started today!** **92**

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PSOC™ Edge E84 HMI Kit
KIT_PSE84_HMI

Coming Soon!

Kit Content
- **PSOC™ Edge E84 HMI Kit with enclosure, sensors, and 4-inch touch display**
- **USB Type-C to Type-C cable**

Highlights
- **4-inch Touchscreen**: Resolution: 480x480 (1:1 aspect ratio) with capacitive touch
- **Digital and Analog Microphones**: 4 digital microphone arrays and 2 analog microphones capable of supporting near-field and far-field local voice commands
- **60GHz RADAR**: for touchless gestures and proximity sensing
- **USB Camera**: 0.3MP VGA 640x480 @ 30fps for interactive computer vision applications
- **Included Sensors:** 6-axis accelerometer & gyroscope, humidity and temperature
- **Expansion Capability**: 2x mikroBUS™ expansion slots, SD card slot
- **Application-Centric Form Factor**: Resembles end-products, helping customers develop and visualize or easily demonstrate target Edge AI/ML application use cases of end products

Featured Components
- **PSE846GPS2DBZC4 PSOC™ Edge E84 MCU**
- **AIROC™ CY55513 Wi-Fi + Bluetooth® combo chip w/ external antenna**
- **BGT60TR13C 60GHz Radar**
- HBVCAM-1939V11 USB camera (OV7675 sensor)
- **2x IM73A135V01 Analog Microphone**
- **4x IM73D122V01 Linear Digital Microphone array for far-field voice**
- BMI270 6-axis Accelerometer & Gyroscope
- SHT40-AD1B-R2 Humidity and Temperature sensor
- **S80KS5123GABHI023 64MB Octal-SPI HYPERRAM**
- **S28HS01GTGZBHI030 128MB Octal-SPI NOR Flash**
- Audio Amplifier with Speaker



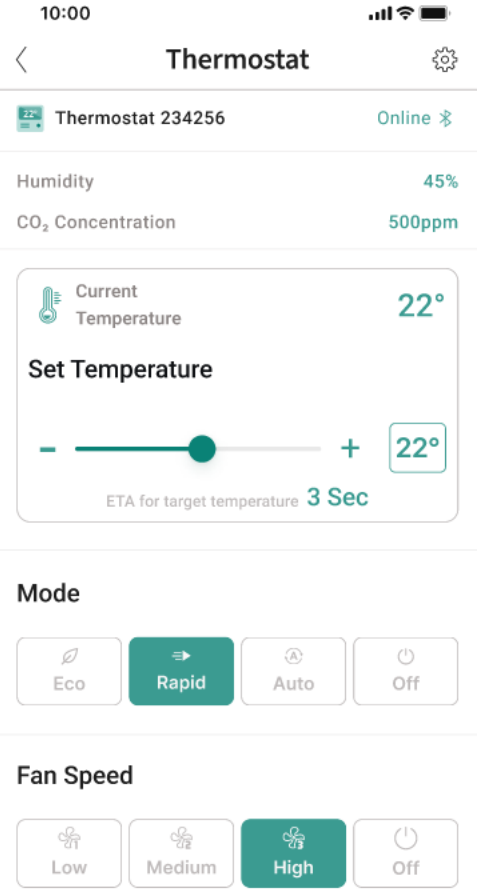
Kit Status
- **Availability: Feb 2026**
- **Orderable P/N**: KIT_PSE84_HMI

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PSOC™ Edge E84 HMI Kit - Thermostat Demo

- Out-of-the-box Demonstration
  - PSOC™ Edge E84 for AI/ML voice, gesture/presence detection and graphics
  - Reliable voice commands with DEEPCRAFT™ Voice assistant processed locally with no need for cloud connection
  - Touch Interfaces utilizing Infineon's CAPSENSE™ Technology
  - Touchless gesture control machine learning (ML) algorithms working with XENSIV™ 60GHz radar sensors
  - Rich graphics interface
  - Phone App to interact with HMI Kit's wireless connectivity provided by AIROC™ CY55513 Wi-Fi + Bluetooth® combo chip

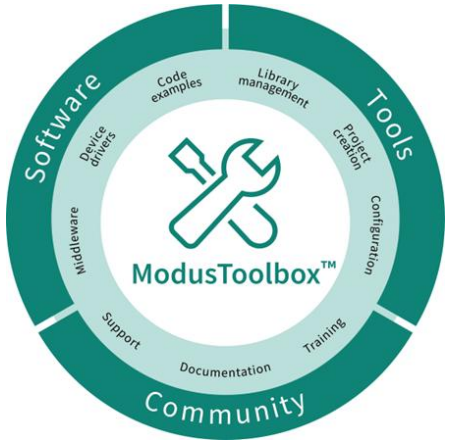




PSOC™ Edge E84 HMI Kit App

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PSOC™ Edge HMI Kit Getting Started - Software Code Examples

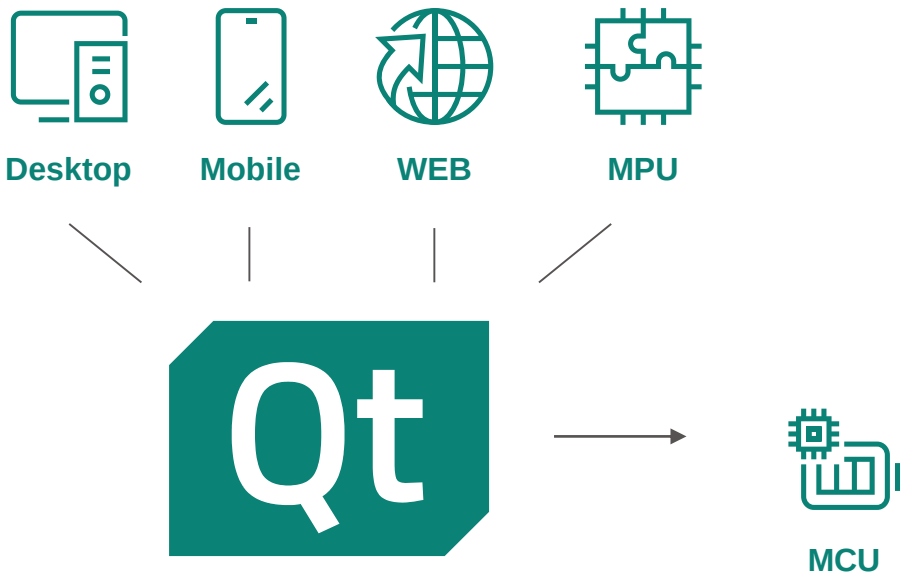


- mtb-example-psoc-edge-ipc-pipes
- mtb-example-psoc-edge-usb-device-hid-mouse
- mtb-example-psoc-edge-wifi-secure-tcp-server
- mtb-example-psoc-edge-wifi-secure-tcp-client
- mtb-example-psoc-edge-wifi-https-client
- mtb-example-psoc-edge-wifi-https-server
- mtb-example-psoc-edge-wifi-web-server
- mtb-example-psoc-edge-btstack-wifi-onboarding
- mtb-example-psoc-edge-crypto-sha
- mtb-example-psoc-edge-wifi-scan
- mtb-example-psoc-edge-wifi-mqtt-client
- mtb-example-psoc-edge-nvm-read-write
- mtb-example-psoc-edge-filesystem-littlefs-freertos
- mtb-example-psoc-edge-dsp-convolution
- mtb-example-psoc-edge-empty-app
- mtb-example-psoc-edge-gpio-interrupt
- mtb-example-psoc-edge-hello-world
- mtb-example-psoc-edge-pwm-square-wave
- mtb-example-psoc-edge-wdt
- mtb-example-psoc-edge-mcwdt
- mtb-example-psoc-edge-psram-xip
- mtb-example-psoc-edge-emulated-eeprom
- mtb-example-psoc-edge-sensor-hub-imu
- mtb-example-psoc-edge-btstack-findme
- mtb-example-psoc-edge-basic-secure-app
- mtb-example-edge-protect-bootloader
- mtb-example-psoc-edge-sram-loading
- mtb-example-psoc-edge-encrypted-boot
- mtb-example-psoc-edge-gfx-lvgl-demo

- mtb-example-psoc-edge-pdm-pcm
- mtb-example-psoc-edge-pdm-to-i2s
- mtb-example-psoc-edge-uart-transmit-receive-dma
- mtb-example-psoc-edge-usb-device-audio-playback
- mtb-example-psoc-edge-ae-application
- mtb-example-psoc-edge-ml-deepcraft-deploy-radar
- mtb-example-psoc-edge-ml-deepcraft-deploy-ready-model
- mtb-example-psoc-edge-ml-deepcraft-deploy-audio
- mtb-example-psoc-edge-ml-deepcraft-deploy-motion
- mtb-example-psoc-edge-ml-deepcraft-data-collection
- mtb-example-psoc-edge-ml-deepcraft-deploy-vision
- mtb-example-psoc-edge-voice-assistant-deploy
- mtb-example-psoc-edge-posix-freertos
- mtb-example-psoc-edge-i2s
- mtb-example-psoc-edge-ipc-sema
- mtb-example-psoc-edge-pwm-timer
- mtb-example-psoc-edge-rtc-basics
- mtb-example-psoc-edge-rtc-periodic-wakeup
- mtb-example-psoc-edge-switching-power-modes
- mtb-example-psoc-edge-usb-device-msc-filesystem-freertos
- mtb-example-psoc-edge-usb-device-hid-generic
- mtb-example-psoc-edge-usb-suspend-resume
- mtb-example-psoc-edge-usb-device-cdc-echo
- mtb-example-psoc-edge-serial-flash-readwrite
- mtb-example-psoc-edge-btstack-hfp-ag
- mtb-example-psoc-edge-btstack-multi-beacon
- mtb-example-psoc-edge-btstack-peripheral-privacy
- mtb-example-psoc-edge-gfx-single-double-buffering
- mtb-example-psoc-edge-ml-face-id

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Qt for MCUs – Bringing the Qt product creation workflow to low-end microcontrollers



for

Resource-constrained systems

Microcontrollers (Cortex M, R, or equivalent)
or
Low-end MPUs
or
Low amount of memory

GUI framework key technologies

Qt Quick Ultralite

Modern GUI component library optimized for resource-constrained systems

QML

Declarative programming language for fast GUI design, prototyping and development

Design and development tools

DS

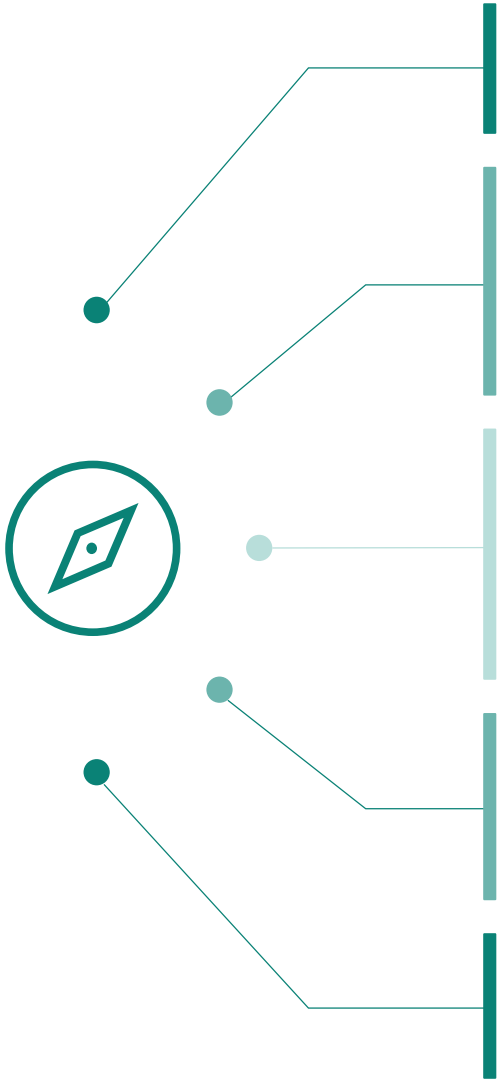
Qt Design Studio, a WYSIWYG tool for quick prototyping and UI design & development

QC

Qt Creator, an IDE to code, build, and debug for any target

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Get started today!



Application overview

- Application web pages
- Application brief

https://www.infineon.com/cms/en/applications/smart-home-building/home-building-automation/smart-thermostat/

Reference designs and boards

- Demonstrator/demo board
- Evaluation design/board
- Reference design/board
- Software tools and simulations

https://www.infineon.com/cms/en/product/evaluation-boards/cy3280-mbr3/
https://infineon.com/cms/en/product/evaluation-boards/cy8ckit-040/
https://www.infineon.com/cms/en/product/evaluation-boards/s2go-pressure-dps368/
https://www.infineon.com/cms/en/product/evaluation-boards/shield_autonom_bgt60/
https://www.infineon.com/cms/en/product/evaluation-boards/demo-bgt60ltr11aip/
https://www.infineon.com/cms/en/product/evaluation-boards/cyw9p62s1-43012evb-01/
https://www.infineon.com/cms/en/product/evaluation-boards/cy8ckit-062s2-43012/
https://www.infineon.com/cms/en/product/evaluation-boards/optiga-trust-m-iot-kit/
https://www.infineon.com/cms/en/product/evaluation-boards/ref_xdps21081_65w1/

Technical documents

- Application note
- User guide
- …

https://www.infineon.com/dgdl/Infineon-AN219528_PSOC_6_MCU_low-power_modes_and_power_reduction_techniques-ApplicationNotes-v06_00-EN.pdf
https://www.infineon.com/dgdl/Infineon-AN228571_Getting_started_with_PSOC_6_MCU_on_ModusToolbox_software-ApplicationNotes-v07_00-EN.pdf
https://www.infineon.com/dgdl/Infineon-AN85951_PSOC_4_and_PSOC_6_MCU_CapSense_Design_Guide-ApplicationNotes-v29_00-EN.pdf
https://www.infineon.com/dgdl/Infineon-PSOC_6_MCU_designing_a_custom_secured_system-ApplicationNotes-v05_00-EN.pdf
https://www.infineon.com/dgdl/Infineon-AN215656_PSOC_6_MCU_Dual-CPU_System_Design-ApplicationNotes-v09_00-EN.pdf
https://www.infineon.com/dgdl/Infineon-AN227910_Low-power_system_design_with_CYW43012_and_PSOC_6_MCU-ApplicationNotes-v02_00-EN.pdf
https://edit.infineon.com/dgdl/Infineon-AN64846_Getting_Started_with_CapSense-ApplicationNotes-v27_00-EN.pdf
https://edit.infineon.com/dgdl/Infineon-AN92239_Proximity_Example_Projects-ApplicationNotes-v03_00-EN.zip
https://www.infineon.com/dgdl/Infineon-AN558_MEMS_Electrical_Implementation-AN-v01_00-EN.pdf?fileId=5546d46261764359016199fad0e62021

Videos and podcasts

- Application videos
- …

https://www.infineon.com/cms/en/product/microcontroller/32-bit-psoc-arm-cortex-microcontroller/psoc-4-32-bit-arm-cortex-m0-mcu/#!videos
https://www.infineon.com/cms/en/product/security-smart-card-solutions/optiga-embedded-security-solutions/optiga-trust/#!videos
https://www.infineon.com/cms/en/product/wireless-connectivity/airoc-wi-fi-plus-bluetooth-combos/#!videos
https://www.infineon.com/cms/en/product/sensor/radar-sensors/radar-sensors-for-iot/#!videos

Trainings

- Webinars, online trainings

https://www.infineon.com/cms/en/product/microcontroller/32-bit-psoc-arm-cortex-microcontroller/#!trainings
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