

PSOC™ Edge E83 Microcontrollers

The Next Generation of Low-Power Advanced Machine Learning Microcontrollers

The PSOC™ Edge E8 series of Arm® Cortex®-M microcontrollers feature high-performance, low-power, secured MCUs with integrated ML hardware acceleration, designed specifically for enabling efficient and responsive ML compute applications in edge devices. These MCUs are ideal for a variety of consumer and industrial applications including HMI, smart home, wearables, robotics, and other smart connected IoT products. In addition, PSOC™ Edge is supported by a rich set of enablement with the industry-recognized ModusToolbox™ software including integration with the DEEPCRAFT™ Studio AI solution and its off-the shelf ML models.

The PSOC™ Edge E83 microcontrollers are based on high-performance Arm® Cortex®-M55, including Helium DSP support and Ethos U-55 NPU, and also a low-power Arm® Cortex®-M33 paired with Infineon's ultra-low power NNLite hardware accelerator, while featuring always-on acoustic activity detection and wake word detection efficient HMI operations and extended battery life. The PSOC™ Edge E83 MCU is ideally suited for applications requiring advanced ML capabilities at the edge, featuring Ethos-U55 NPU acceleration and introducing machine learning enhanced next-generation HMI features such as local voice, cloud voice, vision, and friction-free interface and safety.

Power Performance Efficiency and Advanced ML Acceleration

- Multi-domain architecture for high-performance and fine-grained power optimization
- High-performance Arm® Cortex®-M55 CPU with Helium DSP and Ethos-U55 Neural Processing Unit for advanced ML
- Low-power Arm® Cortex®-M33 with FPU and DSP, and NNLite for low power AI/ML hardware acceleration

Advanced HMI Interfaces

- Audio multi-microphone interface for far-field applications
- Keyword spotting and Wake word detection

State-of-the-art Security

- Lockstep secured enclave in low-power always-on domain
- Infineon Edge Protect Category 4/Platform Security Architecture (PSA) Level 4
- Off-the-shelf trusted Firmware-M enablement and Mbed-TLS for crypto operations

Ease-of-use for developers

- ModusToolbox™ software
 - Comprehensive collection of multi-platform tools and software libraries
 - Includes board support packages (BSPs), peripheral driver library (PDL), and middleware
- End-to-end ML solution with DEEPCRAFT™ Edge AI software and tools

For more information visit [PSOC™ Edge E83](https://www.infineon.com/psoc-edge-e83)



Key features

32-Bit MCU Subsystems

- Up to 400MHz Arm® Cortex®-M55 with Helium DSP
- Up to 200MHz Arm® Cortex®-M33

Machine Learning

- Ethos-U55 for advanced ML
- Infineon's NNLite for low-power AI/ML
- End-to-end ML with DEEPCRAFT™

Memory and SoC Integration

- High-capacity memory
- Ultra-low power RRAM
- Rich peripherals to reduce system cost
- Integrated low-power analog sub-system

Security

- Up to EPC4/PSA L4

HMI

- Keyword spotting and wake word detection

Packages

- WLB-154, BGA-220

Operating Temperature

- Ta: -20 to 70°C, -40 to 105°C

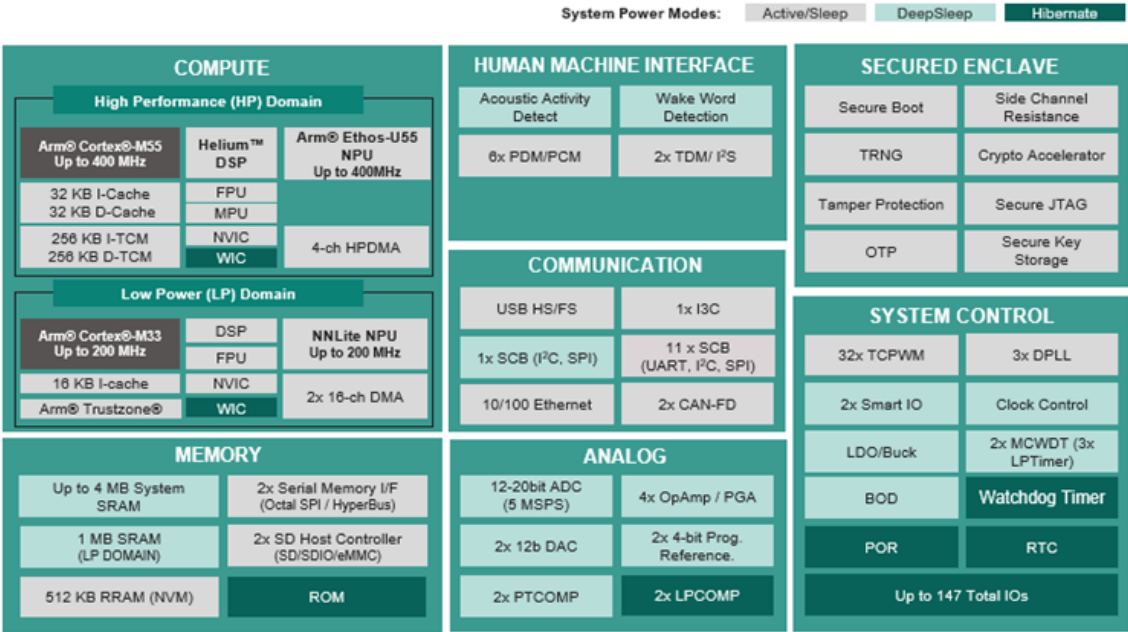
Target applications

- HMI
- Smart Home
- Wearables
- Robotics
- Security Camera



PRODUCT BRIEF

Block Diagram



Orderable Part Numbers and Kits

Kit	Function	Part Number
PSOC™ Edge E84 Evaluation Kit	General purpose evaluation kit for PSOC™ Edge with full function integration of all interfaces	KIT_PSE84_EVAL
PSOC™ Edge E84 AI Kit	Low-cost kit with multiple sensors for evaluation of AI capabilities and fast prototyping	KIT_PSE84_AI

Part Number	Package	Max Frequency	RRAM	Total SRAM	Ethernet and CAN	Security	Temp (Ta)
PSE832GOS2DFNC4T	WLB-154	400 MHz	512kB	5MB	-	PSA L2	-20 to 70 °C
PSE833GOS2DBZC4	BGA-220	400 MHz	512kB	5MB	Yes	PSA L2	-20 to 70 °C
PSE833GOS2DBZQ3	BGA-220	320 MHz	512kB	5MB	Yes	PSA L2	-40 to 105 °C

Additional parts can be found on [Infineon.com/PSOCedgeE83](https://www.infineon.com/PSOCedgeE83)

Published by
Infineon Technologies AG
Am Campeon 1-15, 85579 Neubiberg
Germany

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Public

Version: V2.0_EN
Date: 10/2025

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