PRODUCT BRIEF

# PSOC™ Edge E84 Microcontrollers

## The Next Generation of Low-Power Advanced Machine Learning Microcontrollers with Graphics

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 E84 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. They also integrate 2.5D graphics accelerators and display interfaces, while featuring always-on acoustic activity detection and wake word detection efficient HMI operations and extended battery life. The PSOC™ Edge E84 incorporates both the graphics and the advanced ML capabilities, and boosts SRAM footprint to a total of 6 MB for the most demanding edge applications, providing a high-integration to reduce bill of materials (BOM) while still providing full flexibility in an energy-efficient microcontroller.

### 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
- 2.5D GPU with up to 1024x768 resolution and MIPI-DSI/DBI interfaces

### 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

Find out more about PSOC™ Edge

## 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 subsystem

**Security**

- Up to EPC4/PSA L4

**HMI**

- Keyword spotting and wake word detection
- Low-power graphics, up to 1024x768, 2.5D GPU, MIPI-DSI/DBI

**Packages**

- WLB-154, BGA-220, eWLB-235

**Operating Temperature**

- Ta: -20 to 70°C, -40 to 105°C

## Target applications

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


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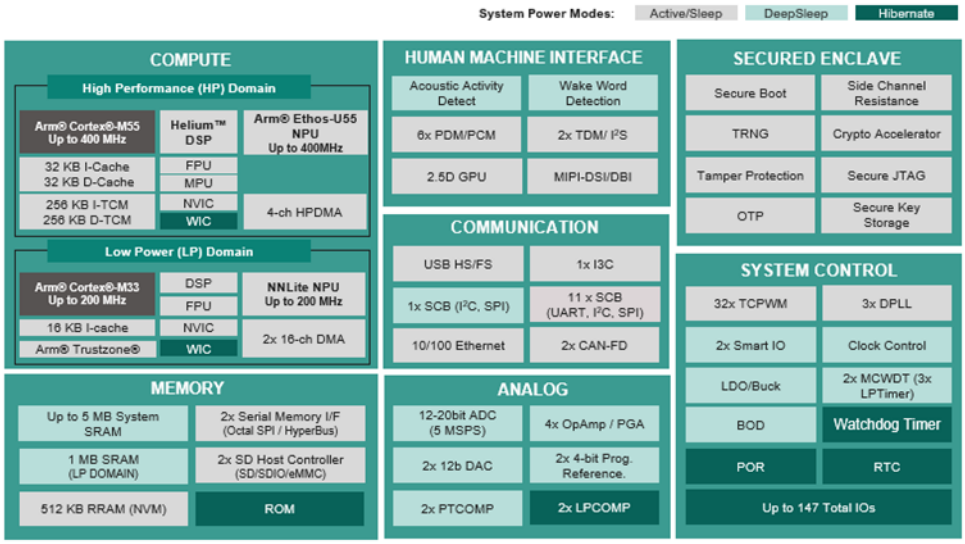
## Block Diagram




## Kits

| Kit | Function |
|---|---|
| PSOC™ Edge E84 Evaluation Kit | General purpose evaluation kit for PSOC™ Edge with full function integration of all interfaces |
| PSOC™ Edge E84 AI Kit | Low-cost kit with multiple sensors on board for fast prototyping with AI /ML evaluation and sensor fusion |


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



**Public**

Document number: 002-39779 Rev. *A
Date: 08/2025

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