



PSOC™ Edge E81 MCUs

The Next Generation of Machine Learning Enabled Microcontrollers

The PSOC™ Edge E81 series of Arm® Cortex®-M microcontrollers featuring high-performance, low-power, secured MCUs and hardware-assisted machine learning (ML) acceleration for next generation applications. The PSOC Edge devices are based on high-performance Cortex-M55, including Helium DSP support as well as a low-power Cortex-M33 paired with Infineon’s ultra-low power NNLite hardware accelerator intended to accelerate neural networks in Machine Learning and AI applications. In addition, the PSOC™ Edge E81 features always-on acoustic activity detection capability that enables HMI operation with low active and standby power consumption supporting longer battery life for battery powered products.

The PSOC™ Edge E81 includes support for voice and audio communications with keyword spotting and wake word detection included, as well as timing peripherals built 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 Imagimob Studio AI solution and its off-the shelf ML models.

Multi-domain architecture for high-performance and fine-grained power optimization

- High-performance Cortex-M55 CPU with Helium DSP
- Low-power Cortex-M33 with FPU, DSP and NNLite for AI/ML hardware acceleration
- 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
 - Off-the-shelf Trusted Firmware-M enablement and Mbed-TLS for crypto operations
- ModusToolbox™ software
 - Comprehensive collection of multi-platform tools and software libraries
 - Includes board support packages (BSPs), peripheral driver library (PDL), and middleware such as CAPSENSE™

Key features

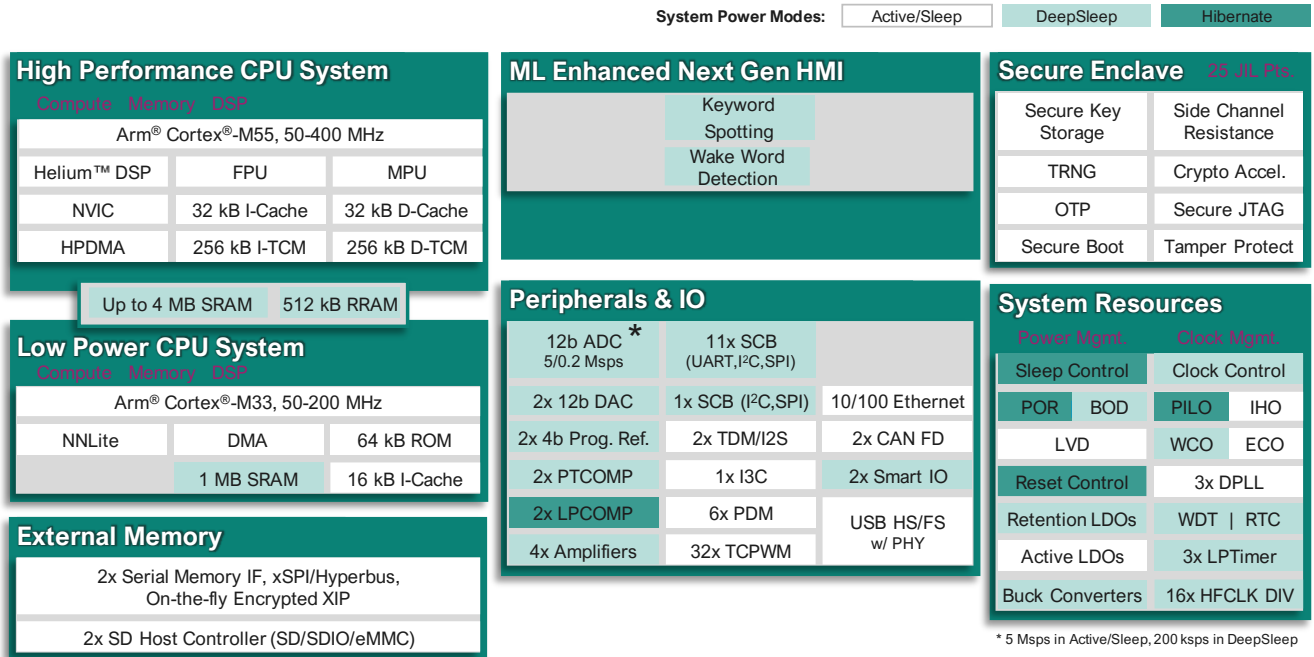
- 32-bit MCU Subsystem
 - Up to 400MHz Arm® Cortex®-M55 including Helium DSP
 - Up to 200MHz Arm® Cortex®-M33
 - Embedded ultra low-power RRAM Technology
- Machine Learning
 - NNLite for AI/ML hardware NN compute
 - End-to-end ML solution with Imagimob
- Memory and SoC Integration
 - Large memory integration for next-gen applications
 - Richer Peripheral set to reduce system cost
- Security
 - Infineon Edge Protect Technology
 - Secured Enclave
- HMI
 - Keyword spotting and wake word detection

Key benefits

- Low-Power ML Capabilities
 - Presence/Gesture/Motion
 - Predictive Maintenance
 - Anomaly Detection
 - Autonomous Operation
- Security
- Motor Control

Key Applications

| | |
|-------------------------------|---|
| Human Machine Interface (HMI) | Appliances, Factory Automation, Industrial Device Usability |
| Smart Home | Thermostat, Speaker, Door Locks |
| Robotics | Vacuum Cleaner, Vacuum Robots, Service Robot, Lawn & Garden Robotics, Industrial Robotics |
| Wearables | Fitness Watch, AR/MR/VR Glasses & Accessories, Audio Accessories |
| Security Camera | IP Camera, Doorbell, Security Camera & Accessories |



For more information, please contact your Infineon representative: <https://www.infineon.com/cms/en/about-infineon/company/contacts/>



www.infineon.com

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

© 2023 Infineon Technologies AG
All rights reserved.

Document number:
Date:

Please note!

This Document is for information purposes only and any information given herein shall in no event be regarded as a warranty, guarantee or description of any functionality, conditions and/or quality of our products or any suitability for a particular purpose. With regard to the technical specifications of our products, we kindly ask you to refer to the relevant product data sheets provided by us. Our customers and their technical departments are required to evaluate the suitability of our products for the intended application.

We reserve the right to change this document and/or the information given herein at any time.

Additional information

For further information on technologies, our products, the application of our products, delivery terms and conditions and/or prices, please contact your nearest Infineon Technologies office (www.infineon.com).

Warnings

Due to technical requirements, our products may contain dangerous substances. For information on the types in question, please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by us in a written document signed by authorized representatives of Infineon Technologies, our products may not be used in any life-endangering applications, including but not limited to medical, nuclear, military, life-critical or any other applications where a failure of the product or any consequences of the use thereof can result in personal injury.