Robust Security, Ultra-Low Power and Superior Touch

World-Class, Award Winning SAM L10/11 MCU Family

Summary

Winner of Best Contribution to IoT Security and LEAP Awards, the SAM L10 and L11 microcontroller family offers world-class features in security, low power and capacitive-touch technology. These MCUs boast industry's lowest power consumption in their class, enhanced Peripheral Touch Controller, robust security features and advanced analog. The family takes an innovative approach to solving the challenges faced by the designers of IoT, security, low-power, touch and general-purpose embedded control applications.

Key Features

- Up to 64 KB Flash and 16 KB SRAM
- 32 MHz Arm® Cortex® M23 Core
- picoPower® Technology
  - less than 25 µA/MHz in active mode
  - less than 100 nA in sleep mode
  - Fast wakeup time: 1.5 µS
  - Flexible power saving features
- Class-leading EEMBC certified low power scores
  - ULPMark-CP: 410
  - ULPMark-PP: 167
- Enhanced Peripheral Touch Controller (PTC)
  - Superior water tolerance, noise immunity and responsiveness
- Integrated hardware security
  - Tamper resistance
  - Arm® TrustZone® technology
  - Secure boot
  - Secure bootloader
  - Crypto accelerators
  - Key storage and protection against remote attacks
  - Root of trust key/unique identity
- Op Amps, ADC and DAC

Target Applications

- Low power
  - Wearables
  - Gaming controls
  - Energy harvesting
  - Augmented reality
  - Low-power industrial
- Capacitive touch
  - Appliances
  - Fitness trackers
  - Automotive door handles
  - Steering wheel controls
  - Keypads and trackpads
- IoT and security
  - Smart cities
  - Home automation
  - Industrial automation
  - Smart agriculture
  - Medical devices
  - Accessories authentication
- General-purpose embedded control

Package Options

Package	VQFN	TQFP	WLCSP	VQFN	SSOP
Pins	32	32	32	24	24
Dimensions (mm)	5 × 5	7 × 7	2.8 × 2.8	4 × 4	8.2 × 5.3

Temperature Options: –40 to 85ºC and –40 to 125ºC AEC-Q100 Grade 1

SAM L10/11 Family Variants

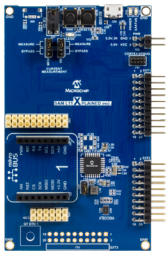
	SAM L10	SAM L11	SAM L11-KPH
Ultra-Low Power	✓	✓	✓
Enhanced PTC	✓	✓	✓
Op Amps, ADC, DAC	✓	✓	✓
Integrated Hardware Security		✓	✓
Secure Thingz Secure Deploy Key Provisioning Option		✓	
Trustonic Kinibi-M SDK Support			✓
Securely Pre-Provisioned With Trustonic Root of Trust Key			✓
Evaluation platform	SAML10 Xplained Pro (DM320204)	SAML11 Xplained Pro (DM320205)	SAML11 Xplained Pro (DM320205)

Rich Development Ecosystem

The SAM L10/L11 family is supported by a rich development ecosystem that will simplify your development effort and shorten your design time to get your products to market faster.

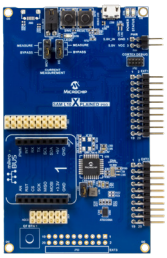
Integrated Development Environment (IDE)	MPLAB® X IDE Atmel Studio 7 IAR Embedded Workbench Arm® Keil® MDK
Software Framework	Atmel START Atmel START TrustZone® Manager
Security Framework	Trustonic Kinibi-M SDK support Secure Thingz key provisioning Trustonic Root of Trust key provisioning
Low Power	Power Debugger Data Visualizer
Touch	QTouch® Configurator QTouch Modular Library 2D Touch Surface Library

SAM L11 Xplained Pro Evaluation Kit (DM320205)



The SAM L11 Xplained Pro Evaluation Kit is ideal for evaluating and prototyping with ultra low power SAM L11 Arm Cortex-M23 based microcontrollers featuring chip-level security and Arm TrustZone Technology.

SAM L10 Xplained Pro Evaluation Kit (DM320204)



The SAM L10 Xplained Pro Evaluation Kit is ideal for evaluating and prototyping with the ultra low power SAM L10 Arm Cortex-M23 based microcontrollers.

The Xplained Pro evaluation kits are supported with various demo examples and feature mikroBUS™ socket and Xplained Pro extension headers to expand your development with MikroElektronika click boards and Xplained Pro extension kits.

Featured Demo Examples	Description
Trusted Execution Environment	Trusted execution of low power temperature sensor application and SAM L11 counteracting malicious code attacks
Secure LoRa® IoT Node	SAM L11 securely transmits light sensor information to The Things Network (TTN) gateway
Automatic Cloud Enrollment	SAM L11 hosts Trustonic's Kinibi-M and can securely enroll with either AWS or Google cloud
Low-Power Weather Station	Implements ultra-low power features and low power analog of SAM L10 to provide environment data using MikroElektronika click boards
SleepWalking	Implements SleepWalking and dynamic power gating for ultra-low power consumption
Water-Tolerant Surface Touch	Showcases Driven Shield Plus capability to help design exceptional water tolerant touch surfaces and trackpads
Water-Tolerant Touch	Showcases Driven Shield Plus capability to help design exceptional water tolerant touch buttons and sliders
Low-Power Keypad	Implements wakeup on touch feature of SAM L10/L11 for ultra-low power keypad design

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