Enhanced Security, Ultra-Low Power and Flexible I/O Capabilities

Kinetis KL8x MCU Family

The Kinetis KL8x MCU family extends the Kinetis MCU portfolio with advanced security capabilities including support for public key cryptography and hardware AES acceleration with side band attack protection.

TARGET APPLICATIONS

- Building control
- Home automation and security
- IoT end node
- Point-of-sale
- Portable healthcare
- Wearables

The KL8x MCU family also extends AES/DES/SHA/RSA/ECC and tamper detection security features to the Kinetis L series portfolio. These advancements are done while maintaining a high level of compatibility with previous Kinetis devices. Kinetis KL8x MCUs are performance efficient and offer industry-leading low power while providing significant BOM savings through smart on-chip integration. The Kinetis L series is supported by a comprehensive set of development tools, software and enablement.

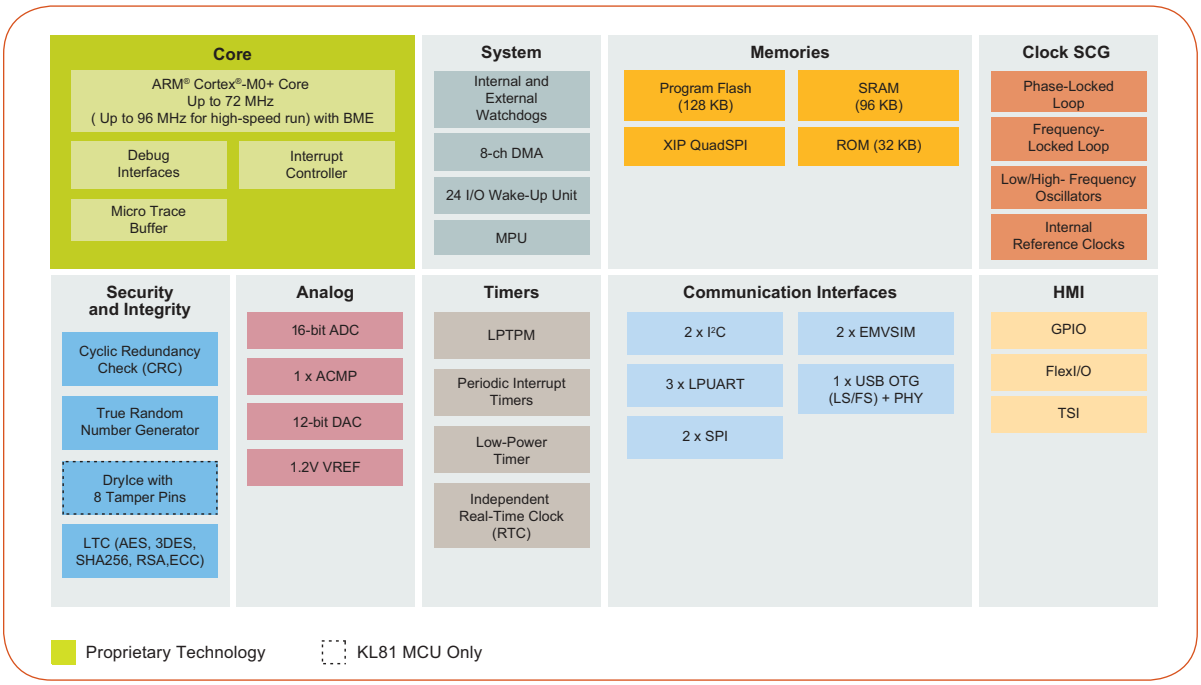
Kinetis KL8x MCUs offer symmetric cryptographic acceleration as a standard feature along with full-speed USB 2.0 On-The-Go (OTG), including options for crystal-less device functionality. The KL8x MCUs have 128 KB flash space and 96 KB SRAM. In addition to the embedded memory resources, the integrated QuadSPI interface supports connections to non-volatile memory (serial NOR), allowing developers to expand beyond the boundaries of a traditional MCU. With the extended memory resources and new security features, developers can safely and quickly enhance their embedded applications with greater capability.

The KL8x MCU family offers the security, scalability, and flexibility to address the challenges of creating smart devices for the Internet of Tomorrow.

KINETIS KL8X MCU BENEFITS

- Optimized system integration and memory size lowering power consumption and improving performance
- Highly compatible with the Kinetis K8x MCU family enabling lower power and cost migration path with the same level of security
- FlexIO peripheral expands MCU capabilities by emulating serial, parallel, or custom interfaces using software drivers provided by the Kinetis SDK
- Low-power operation with dynamic currents down to 120 uA/MHz, state retention stop mode down to 3.5 uA with fast wake-up time and lowest power mode with only 140 nA
- Faster time to market with comprehensive enablement solutions, including SDK (drivers, libraries, stacks), IDE, ROM bootloader, RTOS, online community, and more

KINETIS KL8x MCU FAMILY BLOCK DIAGRAM



COMPREHENSIVE ENABLEMENT SOLUTIONS

Kinetis Software Development Kit (SDK)

- Extensive suite of robust peripheral drivers, stacks and middleware, with new support for symmetric and asymmetric cryptographic acceleration
- Includes software examples demonstrating the usage of the HAL, peripheral drivers, middleware and RTOSes
- Operating system abstraction (OSA) for proprietary MQX™ RTOS, FreeRTOS, and Micrium uC/OS kernels and baremetal (no RTOS) applications

Processor Expert Software Configuration Tool

- Complimentary software configuration tool providing I/O allocation and pin initialization and configuration of hardware abstraction and peripheral drivers

Integrated Development Environments (IDE)

- Atollic® TrueSTUDIO®
- IAR Embedded Workbench®
- ARM Keil® Microcontroller Development Kit
- Kinetis Design Studio IDE
  - No-cost integrated development environment (IDE) for Kinetis MCUs
  - Eclipse and GCC-based IDE for C/C++ editing, compiling and debugging
- Broad ARM ecosystem support through our Connect partner program

Proprietary MQX™ RTOS

- Commercial-grade MCU software platform at no cost with optional add-on software and support packages

Bootloader

- Common bootloader for all Kinetis MCUs
- In-system flash programming over a serial connection: erase, program, verify
- ROM-based bootloader with open source software and host-side programming utilities

Development Hardware

- TWR-KL82Z72M Tower System modular development platform
  - Rapid prototyping and evaluation
  - Low cost, interchangeable modules
- FRDM-KL82Z Freedom development platform
  - Low cost
  - Arduino™ R3 compatible
  - mbed-enabled

KINETIS KL8x MCUS: ADVANCED SECURITY ARCHITECTURE KEY FEATURES

	Features*	Benefit	Feature Details
KL82	Flash access control (FAC) configurable memory protection scheme designed to allow end users to utilize software libraries while offering programmable restrictions to these libraries	Protection of software IP	Non-volatile control registers to set access privileges of on chip flash resources. Supervisor or execute only access can be set for up to 64 different segments.
	Hardware and software mechanisms for acceleration of symmetric cryptography and hashing functions	Reduces CPU loading for cryptographic functions. Simplifies the implementation of higher level security functions and network security standards. For firmware updates, hashing of firmware can be used with encryption keys to ensure that the firmware is trusted	Hardware implementation of security operations symmetrical cryptography. Supports DES, 3DES, AES, SHA-1 and SHA-256 algorithms.
	Cryptographic co-processor for AES, DES and public key cryptography	Offload CPU and reduced software footprint. Acceleration for RSA2048, ECDSA and ECDH reduces the latency for authentication.	
KL81	Tamper detect module with up to 8 tamper pins	Reduce external circuits needed to support anti-tamper mechanisms	Secure key storage space with asynchronous erasure when external tamper events occur. Tamper detection for pin, temperature, voltage and clock, as well as active tamper.

*Security features within the Kinetis KL8x MCU family are incremental. For a full list of security features offered with Kinetis MCUs, visit: **www.nxp.com/Security**.

www.nxp.com/Kinetis/Lseries

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