



Low-power,  
entry-level MCUs

## Kinetis K0x MCU Family

The Kinetis K series MCU portfolio offers the broadest selection of pin, peripheral- and software-compatible MCU families based on the ARM® Cortex®-M4 core.

### TARGET APPLICATIONS

- ▶ Consumer devices
- ▶ Health and wellness monitors
- ▶ Home and building automation
- ▶ Industrial/commercial sensor nodes
- ▶ Sports and activity wearables

These families are performance efficient and offer industry-leading low power while providing significant BOM savings through smart on-chip integration. The Kinetis K series MCU portfolio is supported by the most-comprehensive set of development tools and software.

The Kinetis K0x MCU family is the new entry point into the Kinetis K series MCU portfolio and provides a bridge from the Kinetis L series MCU family. Devices start from 64 KB of flash and are offered in several small-footprint package options. The Kinetis K0x MCU family provides the perfect balance of performance and power consumption, running at 100 MHz with floating point unit, while offering low dynamic power consumption and best-in-class static current consumption with more than 10 flexible low-power modes.

Kinetis K0x MCUs deliver run currents down to 125  $\mu\text{A}/\text{MHz}$ , low-power modes down to 150 nA, and 6  $\mu\text{s}$  wake-up from stop. Each family member combines the ultra-low-power performance with a streamlined level of integration optimized to meet the needs of a broad number of applications.

### KINETIS K0x MCU BENEFITS

- ▶ Cortex-M4-based core featuring digital signal processing capability with floating point unit offering outstanding computational power for control algorithms, sensor data processing, audio processing among others while increasing math accuracy and reducing code size
- ▶ Industry-leading low-power consumption specifications to help extend battery life and reduce overall board power supply requirement with run currents down to 125  $\mu\text{A}/\text{MHz}$
- ▶ Low leakage stop mode with full state retention down to 4.1  $\mu\text{A}$  while maintaining a fast wake-up time of 6  $\mu\text{s}$



- ▶ Ultra-low-power shelf mode down to 150 nA, allowing multiple years of real-time clock retention without compromising battery power
- ▶ Smart integration supporting applications that require higher performance, low power and reduction of BOM cost
- ▶ Highly reliable, fast access flash memory with four levels of protection for code security/protection
- ▶ Faster time to market with comprehensive enablement solutions, including SDK (drivers, libraries, stacks), IDE, bootloader, RTOS, online community and more

## COMPREHENSIVE ENABLEMENT SOLUTIONS

### Kinetis Software Development Kit (SDK)

- ▶ Extensive suite of robust peripheral drivers, stacks and middleware
- ▶ Includes software examples demonstrating the usage of the HAL, peripheral drivers, middleware and RTOS
- ▶ Operating system abstraction (OSA) for our proprietary MQX™ RTOS, FreeRTOS, and Micrium µC/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® [atollic.com/index.php/partnerfreescale](http://atollic.com/index.php/partnerfreescale)
- ▶ Green Hills® Software MULTI [ghs.com/products/freescale\\_kinetis.html](http://ghs.com/products/freescale_kinetis.html)

- ▶ IAR Embedded Workbench® [iar.com/kinetis](http://iar.com/kinetis)
- ▶ ARM Keil® Microcontroller Development Kit [keil.com/freescale](http://keil.com/freescale)
- ▶ 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 the Connect partners program

### Online Enablement with ARM mbed™ Development Platform



- ▶ Rapid and easy Kinetis MCU prototyping and development
- ▶ Online mbed SDK, Developer Community
- ▶ Free software libraries

### Proprietary MQX RTOS

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

### Bootloader

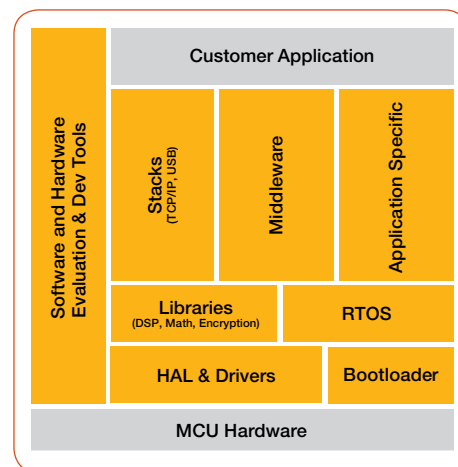
- ▶ Common bootloader for all Kinetis MCUs
- ▶ In-system flash programming over a serial connection: erase, program, verify

- ▶ ROM or flash-based bootloader with open source software and host-side programming utilities

### Development Hardware

- ▶ Tower System modular development platforms
  - Rapid prototyping and evaluation
  - Low cost, interchangeable modules
- ▶ Freedom development platforms
  - Low cost
  - Arduino R3 compatible
  - Select boards are mbed-enabled

## SOFTWARE COMPREHENSIVE FRAMEWORK



## KINETIS K0x MCU FAMILY

