Energy Efficient Solutions optimized for low power

32-bit Microcontrollers

Kinetis K6x MCU Family

Low-power MCUs with Ethernet and USB

Target Applications

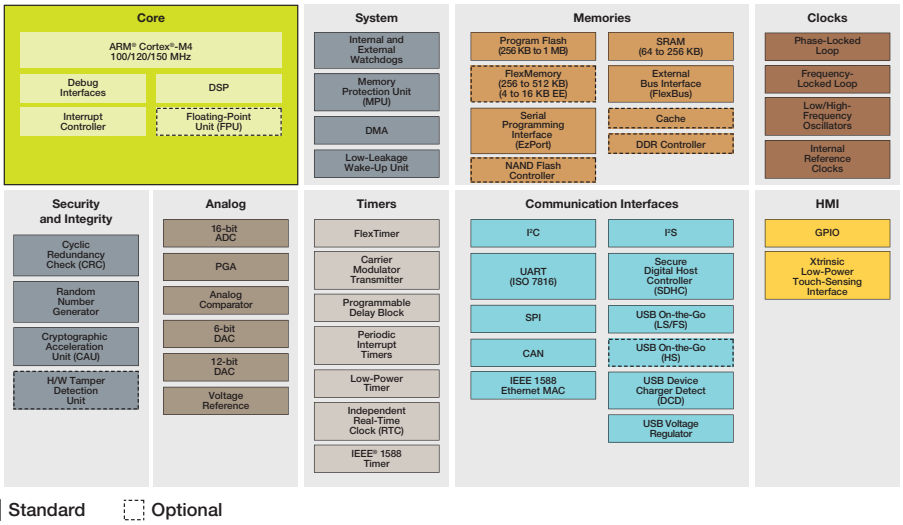
- Building control
- Factory automation
- Industrial drivers
- IoT data concentrators
- Medical monitoring

Overview

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. 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.

Kinetis K6x MCUs are pin-peripheral and software-compatible with many of the Kinetis K series MCU families, offering IEEE® 1588 Ethernet and full and optional high-speed USB 2.0 On-The-Go, including options with USB crystal-less functionality. Devices start from 256 KB of flash in 100 QFP packages extending up to 1 MB of flash and 256KB of SRAM in a 256 MAPBGA package. These devices offer various levels of integration, with a rich suite of analog, communication, timing and control peripherals. Next-generation Kinetis K6x MCUs are further optimized for performance and power consumption and offer more streamlined integration for further BOM cost reductions.

Kinetis K6x MCU Family



freescale™ Kinetis

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 RTOSes
- Operating system abstraction (OSA) for Freescale MQX™ RTOS, FreeRTOS, and Micrium uC/OS kernels and baremetal (no RTOS) applications

Processor Expert Software Configuration Tool

- Complimentary software configuration tool providing IO allocation and pin initialization and configuration of hardware abstraction and peripheral drivers

Integrated Development Environments (IDE)

- Atollic® TrueSTUDIO® atollic.com/index.php/partnerfreescale
- Green Hill® Software MULTI ghs.com/products/freescale_kinetis.html
- IAR Embedded Workbench® iar.com/kinetis
- ARM Keil® Microcontroller Development Kit keil.com/freescale
- 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 Freescale Connect partners

Kinetis K6x MCU Benefits

- IEEE 1588 Ethernet MAC with hardware time stamping provides for precision clock synchronization for real-time industrial control
- Hardware acceleration block helps to optimize the performance of network controllers providing TCP/IP, UDP and ICMP protocol services
- Up to 150 MHz ARM Cortex-M4 core supporting a broad range of processing bandwidth requirements while maintaining excellent cost-effectiveness, easy to use packages and a wide range of memory densities
- Featuring digital signal processing capabilities 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
- Hardware encryption coprocessor for secure data transfer and storage with faster [than software] implementations and minimal CPU loading
- Secure digital host controller supports SD, SDIO, MMC or CE-ATA cards for in-application software upgrades, media files or adding Wi-Fi support
- Outstanding low-power operation with dynamic currents down to 250uA/MHz, state retention stop mode down to 5.8 uA with 4.5 uS wake-up time and lowest power mode down to 340nA
- Smart integration supporting applications requiring 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

Online enablement with ARM mbed™ development platform

mbed Enabled

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

Freescale 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 platform
  - Rapid prototyping and evaluation
  - Low cost, interchangeable modules
- Freescale Freedom development platforms
  - Low cost (<$30 USD)
  - Arduino R3 compatible
  - mbed-enabled on select boards

Kinetis K6x MCUs

Kinetis K6x MCU Sub-Family	Kinetis K60 MCUs High Mixed Signal Integration			Kinetis K61 MCUs High Mixed Signal Integration w/ Security		Kinetis K64 MCUs High SRAM	Kinetis K63 MCUs High SRAM w/ Security
CPU Performance	100 MHz	120 MHz with FPU	150 MHz with FPU	120 MHz with FPU	150 MHz with FPU	120 MHz with FPU	120 MHz with FPU
Embedded Memory (Flash, SRAM)	256–512 KB, 64–128 KB	1024 KB, 128 KB	1024 KB, 128 KB	1024 KB, 128 KB	1024 KB, 128 KB	640–1024 KB, 192–260 KB	1024 KB, 260 KB
Analog	PGA, 2x 16-bit ADC, 2x 12-bit DAC	PGA, 4x 16-bit ADC, 2x 12-bit DAC	PGA, 4x 16-bit ADC, 2x 12-bit DAC	PGA, 4x 16-bit ADC, 2x 12-bit DAC	PGA, 4x 16-bit ADC, 2x 12-bit DAC	2x 16-bit ADC, 2x 12-bit DAC	2x 16-bit ADC, 2x 12-bit DAC
Security	Hardware Encryption			Hardware Encryption and Tamper		Hardware Encryption	Hardware Encryption and Tamper
Other Features	CAN, FlexBus	CAN, FlexBus, NAND Flash Controller, HS USB OTG		CAN, FlexBus, NAND Flash Controller, HS USB OTG, DDR Controller		CAN, FlexBus	CAN, FlexBus
Package Options	MAP121, MAP144, LQFP100, LQFP144	MAP144, LQFP144	MAP144, LQFP144	MAP144, MAP256	MAP144, MAP256	LQFP100, LQFP144, MAP144, XFBGA121	MAP144, LQFP144

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For current information about Kinetis products, software, tools and documentation, please visit freescale.com/Kinetis

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