



**THE DATASHEET OF
MK10DN128VLF5**





Low-power,
baseline MCUs

Kinetis® K1x MCU Family

Just like other members of the Kinetis K series portfolio, the Kinetis K1x series MCU family offers a broad selection of pin-, peripheral-, and software-compatible MCU families based on the ARM® Cortex®-M4 core.

TARGET APPLICATIONS

- ▶ Barcode scanners
- ▶ Electronic point of sales (EPOS)
- ▶ Flow meters
- ▶ Gaming controllers
- ▶ HVAC systems
- ▶ Home and building automation
- ▶ Remote sensors

Kinetis K series MCU 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 K1x MCU family consists of general-purpose MCUs with a variety of memory and integration options. Devices start from 32 KB of flash in a small footprint of 5 x 5 mm 32 QFN package extending up to 1 MB in a 144 MAPBGA package with an optional rich suite of analog, communication, timing and control peripherals. Additionally, its pin compatibility, flexible low-power capabilities and innovative FlexMemory technology help to solve many of the major pain points for embedded designers. Next-generation Kinetis K1x MCUs are further optimized for performance and power consumption and offer more streamlined integration for further BOM cost reductions.

KINETIS K1x MCU BENEFITS

- ▶ Up to 120 MHz Cortex-M4 core supporting a broad range of processing bandwidth requirement while maintaining excellent cost effectiveness in easy-to-use packages
- ▶ Smart integration supporting applications requiring higher performance, lower power and reduction of BOM cost such as: communication peripherals with FIFOs, SPIs with multiple chip selects, UARTs with hardware flow control, multiple internal clock sources (1 kHz, 32 kHz and 4 MHz internal oscillators), superb analog integration with 16-bit ADCs with 12-bit DAC, high-speed comparators, high-precision internal voltage reference and multiple timers with PWM generation capability or very-low-power operation
- ▶ Highly reliable, fast access flash memory with four levels of protection for code security/protection
- ▶ Outstanding low-power operation with dynamic currents down to 190 μ A/MHz, state retention stop mode down to 3.2 μ A with 6 μ s wake-up time and lowest power mode down to 340 nA
- ▶ 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 RTOSes
- ▶ Operating system abstraction (OSA) for MQX™ RTOS, FreeRTOS™, and Micrium® µC/OS kernels and BareMetal (no RTOS) applications

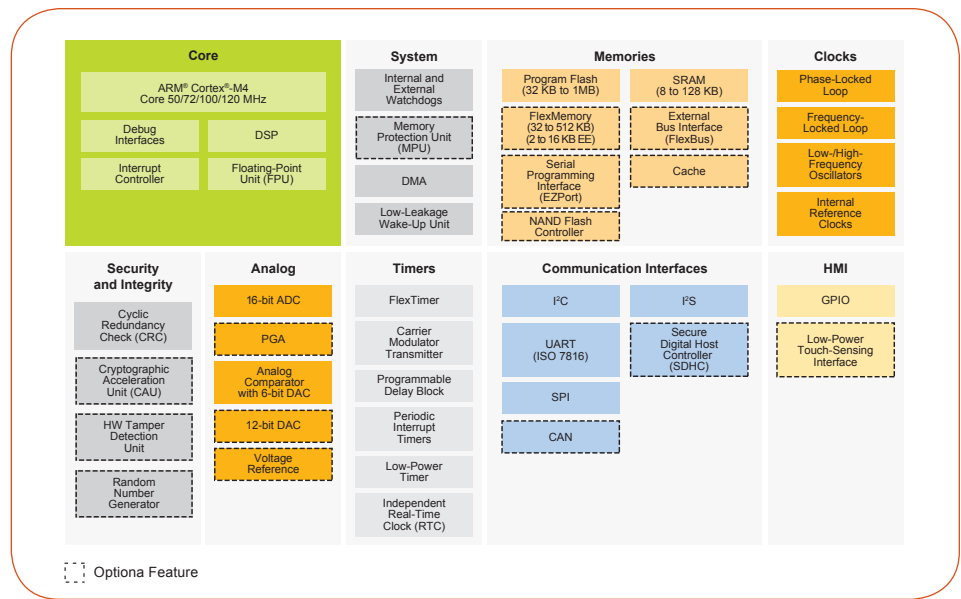
Processor Expert® software configuration tool

- ▶ 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®
www.atollic.com/index.php/partnerfreescale
- ▶ Green Hills® Software MULTI
www.ghs.com/products/freescale_kinetis.html
- ▶ IAR Embedded Workbench®
www.iar.com/kinetis
- ▶ ARM Keil® Microcontroller Development Kit
www.keil.com/freescale
- ▶ Kinetis Design Studio IDE
 - No-cost integrated development environment for Kinetis MCUs
 - Eclipse and GCC-based IDE for C/C++ editing, compiling and debugging

KINETIS K1x MCU FAMILY



- ▶ Broad ARM technology ecosystem support through NXP Partner 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

- ▶ Full-feature RTOS kernel, TCP/IP and USB stacks, file system, shell utility, peripheral drivers, board support packages and more at www.nxp.com/mqx

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

KINETIS K1x MCUs

| Kinetis® K1x MCU Sub-Family | Kinetis K12 MCUs Baseline | Kinetis K11 MCUs Security Rich | Kinetis K10 MCUs High Mixed-Signal Integration | | | |
|-------------------------------|--------------------------------|--------------------------------|--|------------------------------------|--|-------------------------------------|
| CPU Performance | 50 MHz | 50 MHz with FPU | 50 MHz | 72 MHz | 100 MHz | 120 MHz with FPU |
| Embedded Memory (Flash, SRAM) | 192–512 KB, 32–64 KB | 192–512 KB, 32–64 KB | 32–160 KB, 8–16 KB | 96–288 KB, 16–64 KB | 256–512 KB, 32–128 KB | 1 MB, 128 KB |
| Analog | 1 x 16-bit ADC, 1 x 12-bit DAC | 1 x 16-bit ADC, 1 x 12-bit DAC | 1 x 16-bit ADC | PGA, 2x 16-bit ADC, 1 x 12-bit DAC | PGA, 2 x 16-bit ADC, 2 x 12-bit DAC | PGA, 4 x 16-bit ADC, 2 x 12-bit DAC |
| Security | – | Hardware encryption and tamper | – | – | – | – |
| Other features | – | – | – | CAN, FlexBus | CAN, FlexBus | CAN, FlexBus, NAND flash controller |
| Package options | LQFP48, LQFP64, LQFP80, MAP121 | LQFP80, MAP121 | LQFP48, LQFP64, MAP64, QFN32, QFN48 | LQFP64, LQFP80, LQFP100, MAP121 | LQFP80, LQFP100, LQFP144, MAP121, MAP144 | LQFP144, MAP144 |

www.nxp.com/Kinetis

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

- ⊖ [View MK10DN128VLF5 on WIN SOURCE](#)
- ⊖ [Freescale Semiconductor - NXP Information](#)

Optimize Your Supply Chain with WIN SOURCE Solutions

- ✓ Global Sourcing Solution
- ✓ Obsolete Management
- ✓ Cost Control Management
- ✓ Shortage Management
- ✓ Alternative Solution
- ✓ Excess Inventory Management