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What is "Embedded - Microcontrollers"?

"Embedded - Microcontrollers" refer to small, integrated circuits designed to perform specific tasks within larger systems. These microcontrollers are essentially compact computers on a single chip, containing a processor core, memory, and programmable input/output peripherals. They are called "embedded" because they are embedded within electronic devices to control various functions, rather than serving as standalone computers. Microcontrollers are crucial in modern electronics, providing the intelligence and control needed for a wide range of applications.

Applications of "Embedded - Microcontrollers"

Details	
Product Status	Active
Core Processor	ARM® Cortex®-M4
Core Size	32-Bit Single-Core
Speed	72MHz
Connectivity	CANbus, EBI/EMI, I²C, IrDA, SPI, UART/USART, USB, USB OTG
Peripherals	DMA, I²S, LVD, POR, PWM, WDT
Number of I/O	52
Program Memory Size	256KB (256K x 8)
Program Memory Type	FLASH
EEPROM Size	2K x 8
RAM Size	64K x 8
Voltage - Supply (Vcc/Vdd)	1.71V ~ 3.6V
Data Converters	A/D 29x16b; D/A 1x12b
Oscillator Type	Internal
Operating Temperature	-40°C ~ 105°C (TA)
Mounting Type	Surface Mount
Package / Case	80-LQFP
Supplier Device Package	80-FQFP (12x12)
Purchase URL	https://www.e-xfl.com/product-detail/nxp-semiconductors/mk20dx256vlk7r

High-performance microcontrollers with USB On-The-Go

Kinetis® K2x USB 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

- Barcode scanners
- Electronic point of sale (EPOS)
- Gaming accessories
- Health and wellness monitors
- Home and building automation
- Industrial/commercial sensor nodes
- IoT data concentrators
- Smart grid data concentrators
- Sports and activity wearables

FEATURES

The Kinetis K2x MCU family based on the ARM® Cortex®-M4 core offers full and optional high-speed USB 2.0 On-The-Go (OTG), including options for crystal-less device functionality. Devices range from 32 KB to 2 MB of flash with up to 1 MB of SRAM and up to 2 USB controllers; packages include BGA, LQFP, QFN and WLCSP spanning from 32- to 210-pin options.

The Kinetis K2x MCU family is a scalable portfolio with various levels of integration and security. This portfolio offers a rich suite of analog, communication, timing and control peripherals to accommodate a wide range of requirements.

COMPREHENSIVE ENABLEMENT SOLUTIONS

MCUXpresso software development kit (SDK)

- Pre-integrated, production-grade software including peripheral drivers, connectivity stacks, middleware and RTOS
- Usage examples for all drivers, stacks and middleware plus sample applications make getting started easy
- Customizable downloads based on MCU, evaluation board, and component selections

MCUXpresso integrated development environment (IDE)

- Feature-rich IDE based on Eclipse and GCC providing a powerful application development environment
- MCU-specific debugging views, code trace and profiling, multicore debugging, and more
- Supports Freedom, Tower® and your custom development boards with debug probes from NXP®, P&E Micro, and SEGGER
- Available in full-featured free (code size unlimited) and affordable professional editions (including professional support)

MCUXpresso config tools

- Graphical pins tool configures the muxing, electrical properties and routing of pins; provides real-time feedback of I/O conflicts and code generation of pin muxing source and header files
- Graphical clocks tool configures the MCU clock tree system and provides guidance with system fine-tuningy

Ecosystem partner tools

- IAR Embedded Workbench®
- ARM Keil® microcontroller development kit
- ARM mbed™ IoT Device Platform
- SOMNIUM® DRT Cortex-M IDE
- Atollic® TrueSTUDIO®

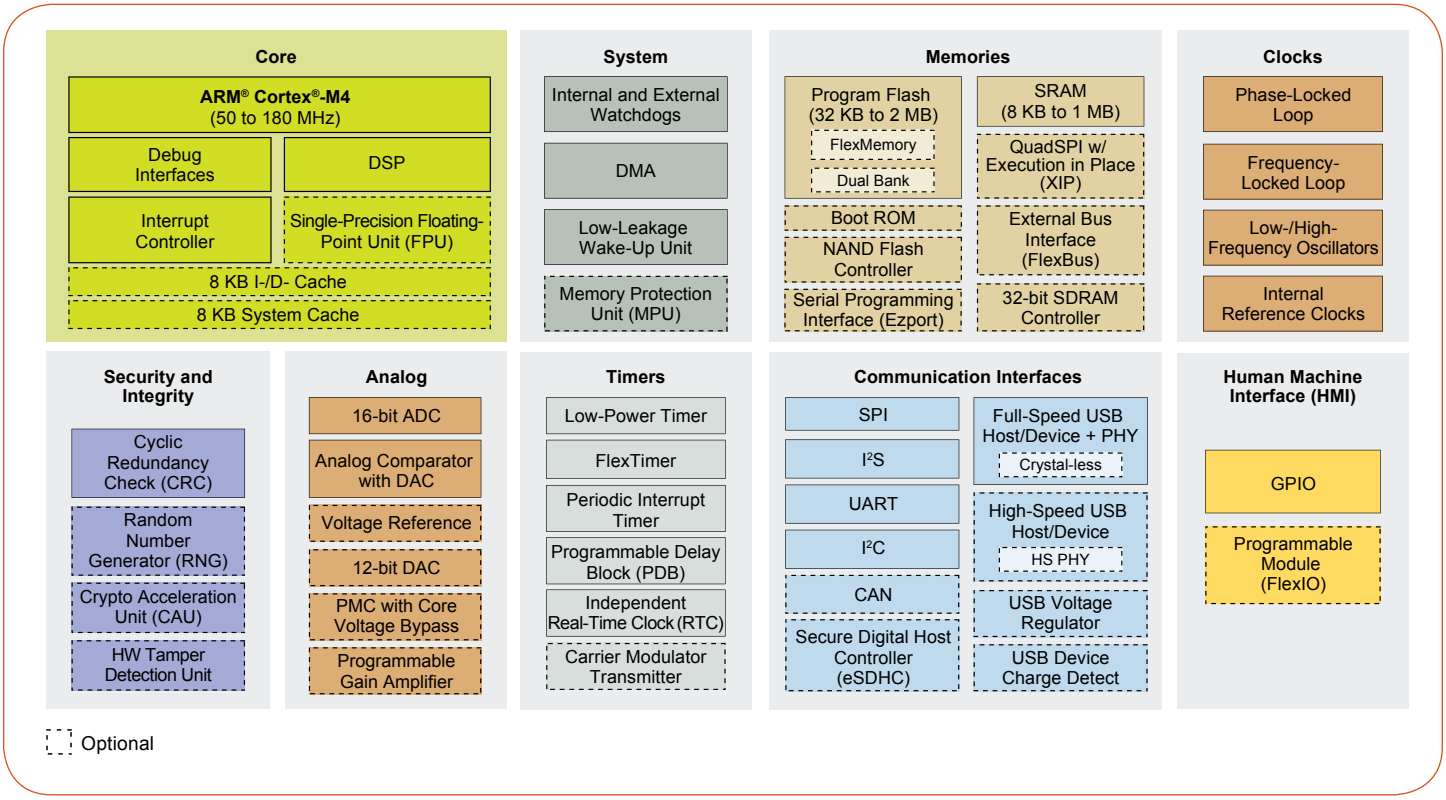
Development hardware

- Low-cost Freedom development boards

Kinetis 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

KINETIS K2x USB MCU FAMILY BLOCK DIAGRAM



KINETIS K2x MCU FAMILIES

Kinetis K2x USB MCUs								
	CPU ARM® Cortex®-M4	Memory	Communications		Security			Development Boards
			USB Controllers	CAN	RNG	Symmetric Crypto Accelerator	Anti-Tamper	
K28 Dual USBs, large memory and PMC w/core voltage bypass	150 MHz w/FPU	2 MB flash 1 MB SRAM SDRAM controller QuadSPI interface	2 x full-speed crystal-less + high-speed w/ HS PHY	–	Yes	Yes	–	FRDM-K28F
K27 Dual USBs and large memory	150 MHz w/FPU	2 MB flash 1 MB SRAM SDRAM controller QuadSPI interface	2 x full-speed crystal-less + high-speed w/HS PHY	–	Yes	Yes	–	FRDM-K28F
K26 Dual USBs and high performance	180 MHz w/FPU	2 MB flash 256 KB SRAM SDRAM controller	2 x full-speed crystal-less + high-speed w/HS PHY	2	Yes	Yes	–	FRDM-K66F TWR-K65F180M
K24 Cost-effective and 256 KB SRAM	120 MHz w/FPU	1 MB flash 256 KB 256 KB SRAM	1 x full-speed	1*	Yes	Yes	–	FRDM-K64F TWR-K64F120M TWR-K24F120M
K22 Cost-effective	120 MHz w/FPU	640–1024 KB flash 128 KB SRAM	1 x full-speed	1	–	–	–	TWR-K21F120MA
	120 MHz w/FPU	128 KB–1 MB flash 48–128 KB SRAM	1 x full-speed crystal-less	–	Yes	–	–	FRDM-K22F TWR-K22F120M
	100 MHz w/FPU	128 KB flash 24 KB SRAM	1 x full-speed	–	–	–	–	FRDM-K22F TWR-K22F120M
	50 MHz	192–512 KB flash 32–64 KB SRAM	1 x full-speed	–	–	–	–	TWR-K21D50M
K21 Advanced security	120 MHz w/FPU	640 KB–1 MB flash 128 KB SRAM	1 x full-speed	1*	Yes	Yes	Yes	TWR-K21F120MA
	50 MHz	192–512 KB flash 32–64 KB SRAM	1 x full-speed	1*	Yes	Yes	Yes	TWR-K21D50M
K20 High mixed-signal integration	120 MHz w/FPU	512 KB–1 MB flash 128 KB SRAM NAND controller	2 x full-speed + high-speed	2*	–	–	–	TWR-K60F120M
	100 MHz	256–512 KB flash 32–128 KB SRAM	1 x full-speed	2*	–	–	–	TWR-K60D100M
	72 MHz	96–288 KB flash 16–64 KB SRAM	1 x full-speed	2*	–	–	–	TWR-K20D72M
	50 MHz	32–160 KB flash 8–16 KB SRAM	1 x full-speed	2*	–	–	–	TWR-K20D50M

***Feature only supported by a subset family**
RNG: Random Number Generator
FPU: Floating Point Unit

www.nxp.com/Kinetis/Kseries

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