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.

**Kinetis K6x 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**
- Building control
- Factory automation
- Home automation
- Industrial drivers
- IoT data concentrators
- Medical monitoring

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 is supported by a comprehensive set of development tools, software and enablement.

The Kinetis K6x MCU family offers IEEE® 1588 Ethernet, full and optional high-speed USB 2.0 On-The-Go (OTG), including options for crystal-less device functionality. Devices range from 256 KB to 2 MB of flash, with 256 KB of SRAM; packages include BGA, LQFP and WLCSP, which span from 100 to 256 pins.

The Kinetis K6x MCU family is a scalable portfolio with various levels of integration, offering a rich suite of analog, communication, timing and control peripherals to accommodate a wide range of requirements.

**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 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
KINETIS K6x MCU FAMILY BLOCK DIAGRAM

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

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 180 MHz 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 and 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 250 µA/MHz, state retention stop mode down to 5.8 µA with 4.5 µS wake-up time and lowest power mode down to 340 nA
- 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
<table>
<thead>
<tr>
<th>Kinetis K6x MCU Sub-Family</th>
<th>Kinetis K65 MCUs High Performance w/ Security</th>
<th>Kinetis K64 MCUs High SRAM w/ Security</th>
<th>Kinetis K63 MCUs High Mixed-Signal Integration w/ Security</th>
<th>Kinetis K61 MCUs High Mixed-Signal Integration</th>
<th>Kinetis K60 MCUs High Mixed-Signal Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Performance</td>
<td>180 MHz w/ FPU</td>
<td>180 MHz w/ FPU</td>
<td>120 MHz w/ FPU</td>
<td>120 MHz w/ FPU</td>
<td>100 MHz</td>
</tr>
<tr>
<td>Embedded Memory (Flash, SRAM)</td>
<td>Up to 2048 KB, 256 KB</td>
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<td>640–1024 KB, 192–256 KB</td>
<td>1024 KB, 128 KB</td>
<td>256–512 KB, 64–128 KB</td>
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<tr>
<td>Analog</td>
<td>2x 16-bit ADC, 2x 12-bit DAC</td>
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<tr>
<td>Security</td>
<td>Hardware Encryption</td>
<td>Hardware Encryption and Tamper Detection</td>
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</tr>
<tr>
<td>Other Features</td>
<td>H5 USB w/ PHY, CAN, FlexBus, SDRAM Controller</td>
<td>CAN, FlexBus</td>
<td>CAN, FlexBus, NAND Flash Controller, H5 USB, DDR Controller</td>
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<td>CAN, FlexBus, NAND Flash Controller, H5 USB</td>
</tr>
<tr>
<td>Package Options</td>
<td>MAP144, LQFP144</td>
<td>WLCSP169, MAP169</td>
<td>MAP144, LQFP144</td>
<td>MAP144, LQFP144</td>
<td>MAP144, LQFP144</td>
</tr>
<tr>
<td>Development Board</td>
<td>TWR-K66F180M, FRDM-K66F</td>
<td>TWR-K65F180M</td>
<td>FRDM-K64F TWR-K64F120M</td>
<td>TWR-K60F120M</td>
<td>TWR-K60F120M</td>
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</tbody>
</table>

*Note: Not all features present on each device or development board. Check technical documentation to confirm feature availability per package.*