The Kinetis Based on the ARM® Cortex®-M4 core, the K30 MCU family offers high-precision analog integration, flexible low-power and peripheral options.

**TARGET APPLICATIONS**
- Thermostats
- Smart meters
- Heart rate monitors
- Blood gas analyzers

Families are built from innovative 90 nm thin-film storage (TFS) flash technology with unique FlexMemory (EEPROM) capability, and offer industry-leading low power and mixed signal analog integration.

The K30 MCU family is pin, peripheral and software compatible with the K10 MCU family and adds a flexible low-power segment LCD controller with support for up to 320 segments. Devices start from 64 KB of flash in 64 LQFN packages extending up to 512 KB in a 144 MAPBGA package with a rich suite of analog, communication, timing and control peripherals.

**ONE-STOP ENABLEMENT OFFERING—MCU + IDE + RTOS**
- Tower® System development board platform
- Integrated development environments
  - Eclipse-based CodeWarrior® V10.x IDE and Processor Expert®
- IAR Embedded Workbench®
- ARM® Keil® MDK
- Kinetis Design Studio IDE
- Runtime software and RTOS
  - Math, DSP and encryption libraries
  - Motor control libraries
  - Complimentary bootloaders (USB, Ethernet, RF, serial)
  - Complimentary embedded GUI
  - MQX™ RTOS
  - Micrium® µC/OS-III
  - Express Logic ThreadX
  - SEGGER embOS
  - FreeRTOS
- Full ARM® ecosystem
## Features

- ARM® Cortex®-M4 core with DSP instruction support
- Up to 16-channel DMA; crossbar switch
- Flexible, low-power LCD controller with support for up to 320 segments (40 x 8 or 44 x 4)
- LCD blink mode enables low average power while remaining in low-power mode
- Segment-fail detect guards against erroneous readouts and reduces LCD test costs
- Frontplane/backplane reassignment provides pin-out flexibility, easing PCB design and allows LCD configuration changes via firmware with no hardware re-work
- Supports multiple 3 V and 5 V LCD panel sizes with fewer segments (pins) than competitive controllers and no external components
- Unused LCD pins can be configured as other GPIO functions
- Low-power capacitive touch-sensing interface
- Provides a modern upgrade from mechanical to touch keypad, rotary and slider user interfaces and operates in all low-power modes with minimal current added; supports up to 16 inputs
- 10 ultra-low-power modes with flash programming and analog operation down to 1.71 V
- Low-power timer, low-power RTC, low-leakage wake-up unit
- Memory protection unit
- Hardware cyclic redundancy check engine
- Independent-clocked COP; external watchdog monitor
- Peripheral activity and wake-up times can be optimized to suit application requirements, enabling extended battery life (Stop currents of <500 nA, run currents of <200 μA/MHz, 4 μs wake-up from Stop)
- Continual device operation in reduced power states with flexible wake-up options
- 64–512 KB flash; up to to 128 KB of SRAM
- 32–256 KB FlexMemory
- High reliability, fast access program memory with four levels of security protection. Independent flash banks allow concurrent code execution and firmware updating
- FlexMemory provides 32 bytes–4 KB of user-segmentable byte write/erase EEPROM
- FlexNVM 32–256 KB for extra program code, data or EEPROM backup

## Benefits

- Up to 100 MHz core supporting a broad range of processing bandwidth needs
- Peripheral and memory servicing with reduced CPU loading
- Concurrent multi-master bus accesses for increased bus bandwidth
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- Concurrent multi-master bus accesses for increased bus bandwidth
- Provides memory protection for all cross bar switch masters, increasing software reliability
- Validates memory contents and communication data, increasing system reliability
- Prevents code runaway in fail-safe applications; drives output pin to safe state external components if watchdog event occurs
- High reliability, fast access program memory with four levels of security protection. Independent flash banks allow concurrent code execution and firmware updating
- FlexMemory provides 32 bytes–4 KB of user-segmentable byte write/erase EEPROM
- FlexNVM 32–256 KB for extra program code, data or EEPROM backup

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### KINETIS K30 FAMILY

![KINETIS K30 FAMILY BLOCK DIAGRAM](image_url)
## KINETIS K30 FAMILY OPTIONS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Memory</th>
<th>Feature Options</th>
<th>Packages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CPU (MHz)</td>
<td>Flash (KB)</td>
<td>Flex NVM (KB)</td>
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<td>256</td>
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</tbody>
</table>

yy = Package designator
*144pin only