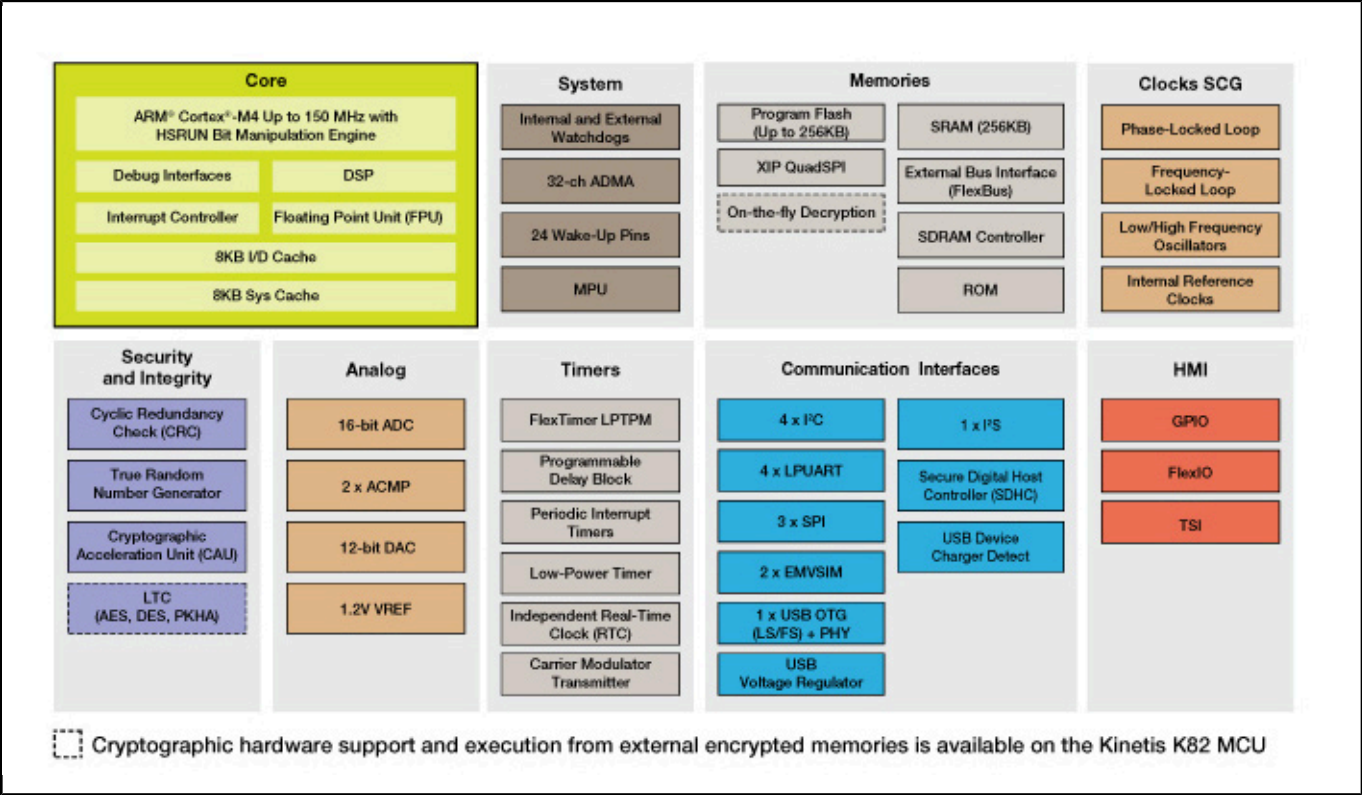# Kinetis® K80-150 MHz Advanced Security and QuadSPI Microcontrollers (MCUs) Based on Arm® Cortex®-M4 Core

K80_150

Last Updated: Mar 5, 2025

The Kinetis® K80 MCU sub-family builds upon the Kinetis MCU portfolio with advanced security capabilities including Boot ROM to support encrypted firmware updates. The K80 MCU sub-family sub-family includes QuadSPI serial flash interface and separate voltage domain for a subset of IO pins. The QuadSPI interface supports connections to non-volatile memory for data or code. The extended memory resources allow developers to enhance their embedded applications with greater capability and features. These advancements are done while maintaining a high level of compatibility with the rest of the Kinetis MCU portfolio.

Kinetis K80/K82 MCU Block Diagram Block Diagram

Core
- ARM® Cortex®-M4 Up to 150 MHz with HSRUN Bit Manipulation Engine
- Debug Interfaces
- DSP
- Interrupt Controller
- Floating Point Unit (FPU)
- 8KB I/D Cache
- 8KB Sys Cache

System
- Internal and External Watchdogs
- 32-ch ADMA
- 24 Wake-Up Pins
- MPU

Memories
- Program Flash (Up to 256KB)
- SRAM (256KB)
- XIP QuadSPI
- External Bus Interface (FlexBus)
- On-the-fly Decryption
- SDRAM Controller
- ROM

Clocks SCG
- Phase-Locked Loop
- Frequency-Locked Loop
- Low/High Frequency Oscillators
- Internal Reference Clocks

Security and Integrity
- Cyclic Redundancy Check (CRC)
- True Random Number Generator
- Cryptographic Acceleration Unit (CAU)
- LTC (AES, DES, PKHA)

Analog
- 16-bit ADC
- 2 x ACMP
- 12-bit DAC
- 1.2V VREF

Timers
- FlexTimer LPTPM
- Programmable Delay Block
- Periodic Interrupt Timers
- Low-Power Timer
- Independent Real-Time Clock (RTC)
- Carrier Modulator Transmitter

Communication Interfaces
- 4 x I²C
- 1 x I²S
- 4 x LPUART
- Secure Digital Host Controller (SDHC)
- 3 x SPI
- USB Device Charger Detect
- 2 x EMVSIM
- 1 x USB OTG (LS/FS) + PHY
- USB Voltage Regulator

HMI
- GPIO
- FlexIO
- TSI

Cryptographic hardware support and execution from external encrypted memories is available on the Kinetis K82 MCU

View additional information for Kinetis® K80-150 MHz Advanced Security and QuadSPI Microcontrollers (MCUs) Based on Arm® Cortex®-M4 Core.

Note: The information on this document is subject to change without notice.