Dual-core, highly secure, energy-efficient MCU

K32 L3 MCU Family

Building on the success and wide adoption of the Kinetis MCU portfolio, the K32 L3 MCU family is designed to deliver a power-optimized implementation along with advanced security capabilities and protection from physical tamper events.

TARGET APPLICATIONS

- Building automation
  - Security and access control
  - Building control and monitoring
  - Building HVAC control
  - Secure applications
- Industrial
  - Factory automation
  - Robotics
- Smart home
  - Door locks
  - Smart thermostats
  - Lighting control
  - Security systems

OVERVIEW

The K32 L3 MCU family delivers significant improvements in power optimization and security advancements to address a wide range of industrial and IoT applications. The K32 L3 family provides new enhancements such as low-leakage, power-optimized peripherals, a DC-DC converter, and security features like authenticated boot, secure update and tamper detection pins.

The K32 L3 family includes a high-performance Arm® Cortex®-M4 processor and an optional low-power Cortex-M0+ processor, ideal for applications that require a host MCU and a low-power MCU. With up to 1.25 MB flash and up to 384 kB SRAM, the K32 L3 family offers ample memory resources to address different applications tasks in a small form factor, low-power, and highly secure design.

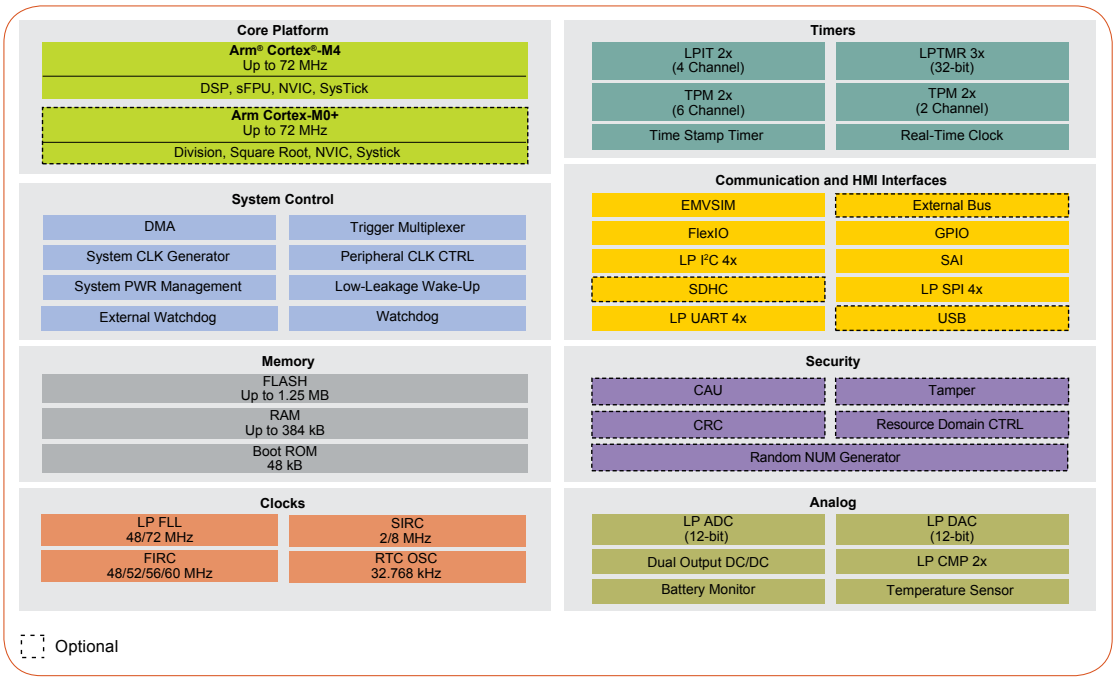
The introduction of the K32 L3 family is the start of a long line of MCUs which will further advance our security and power optimization to lead the market in next-generation, power-conscious and low-leakage applications.

Take advantage of the robust enablement to reduce development effort and speed time-to-market with NXP's comprehensive offering of development tools and MCUXpresso software providing an open-source software development kit (SDK), an easy-to-use integrated development environment (IDE) and a comprehensive suite of system configuration tools.

ENABLEMENT

- FRDM-K32L3A6 Freedom development board
- Support for NXP's MCUXpresso and IAR Embedded Workbench® IDEs
- Full integration with NXP's MCUXpresso SDK
- Support for multiple RTOSes including FreeRTOS™

K32 L3 MCU FAMILY BLOCK DIAGRAM



K32 L3 MCU FAMILY KEY FEATURES AND BENEFITS

Features	Benefits
Dual-Core Architecture	The dual-core feature (72 MHz Arm® Cortex®-M4 core and optional Cortex M0+ core) of this family makes it ideal for applications that require a high-performance host process to run the application and a low-power processor for low-throughput operations
Large On-Chip Memory	Ample memory resources (with up to 1.25 MB flash, up to 384 kB SRAM and 48 kB ROM (Bootloader)) to fit different custom application code and data, reducing complex two-chip solutions to a single device
High Security	• Resource Domain Controller for access control, system memory protection and peripheral isolation • Cryptographic subsystem that includes a dedicated core, dedicated instruction memory (IRAM and IROM) and dedicated data RAM for autonomous implementation of encryption, signing, and hashing algorithms including AES, DES, SHA, RSA and ECC • Secure key management for storing and protecting sensitive security keys • Wiping of the crypto subsystem memory, including security keys, upon sensing a security breach or physical tamper event
Secure Boot	Built-in secure boot to assure only authorized and authenticated code runs in the device
DC-DC Converter	Reduces the effective current consumption over standard bypass mode
Analog	High-performance on-chip analog (ADC, DAC, CMP) for sensor aggregation and other sophisticated applications
Small, High Pin-Count Packages	Large I/O capability in different packages including BGA, LQFP and QFN
Comprehensive Enablement	Complete development hardware, software stacks, drivers and RTOS for easy design and fast time-to-market

ORDERABLE PART NUMBERS

Product		Memory		Core		Package
Part Number	Availability	Flash	SRAM	Cortex-M4	Cortex-M0+	Package
K32L3A60VPJ1A	Q3 2019	1.25 MB	384 kB	√	√	176 VFBGA 9 x 9 x 0.86mm 0.5mm pitch
K32L3A60VLQ1A	Q4 2019	1.25 MB	384 kB	√	√	144 LQFP 20 x 20 x 1.6 mm 0.5mm pitch
K32L3B50VLL1A	Q4 2020	1 MB	256 kB	√		100 LQFP 14 x 14 x 1.7mm 0.5mm pitch
K32L3B50VMC1A	Q4 2020	1 MB	256 kB	√		121 MBGA 8 x 8 x 1.4mm 0.65 mm pitch
K32L3B40VLL1A	Q4 2020	512 kB	128 kB	√		100 LQFP 14 x 14 x 1.7mm 0.5mm pitch
K32L3B40VFW1A	Q4 2020	512 kB	128 kB	√		64 QFN 9 x 9 x 0.85 mm 0.5 mm pitch

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