NXP Announces K32 Energy-efficient Microcontroller Series for Advanced Security and Physical Protection

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Nuremberg, Germany – (Embedded World 2019) – February 25, 2019 – NXP Semiconductors today introduced the K32 microcontroller (MCU) series to advance the energy efficiency of real-time embedded applications and enable advanced security with physical tamper protection in a wide range of Industrial and Internet-of-Things (IoT) applications. The power-efficient K32 MCUs complement the recently launched performance efficient LPC5500 MCU series.

Building upon the market success and broad adoption of the Kinetis MCU platform, the K32 series targets:

- Energy efficiency for low duty cycle applications with wide operating voltage range, ultra-low leakage power modes that support full SRAM retention and fast wake-up
- Purpose-built high-performance mixed-signal (HPMS) with architectural improvements for power optimization
- Advanced embedded security for device authentication, confidentiality, and physical tamper detection and resistance

First to launch in the series is the K32 L3 family, a 72MHz Arm® Cortex®-M4 based MCU with an optional Cortex-M0+. The device offers up to 1.25MB flash and 384KB SRAM with numerous serial communication interfaces, 12-bit 1MSPS ADC, 10-bit DAC and comparator, 32-bit PWM timer modules, and an external memory controller for flexible expansion. The complete K32 L3 family is planned to support flash sizes from 512KB to 1.28MB, but the full range is available for immediate development from the initial superset.

Key features of the K32 L3 MCU family include,

- **Energy Efficiency and Ultra-Low Leakage**
  - o Fast wake-up from 2uA current with partial SRAM retention, and 7uA current with full SRAM retention (3V, 25C, DC-DC)
  - o Single inductor, multiple output (SIMO) DC-DC to maximize energy efficiency, added flexibility to provide core power, as well as two independent I/O rails, up to 1.8 volts
- **Purpose built HPMS for Power Optimization**
  - o Low power 12-bit ADC with low power mode operation and as low as 18uA current draw at 100K samples per second
  - o Sub 1uA comparator current in operation with a 5us propagation delay
  - o Internal reference clock with ±1% accuracy over operating range
- **Security and Protection**
  - o As low as 200nA in always-on VBAT mode, with 32K low power RTC oscillator and register retention and four tamper pins for physical tamper protection
  - o Uncompromised Root-of-Trust (RoT) with authenticated boot, encrypted firmware update and storage of public key hash in one-time programmable (OTP)
  - o Hardware acceleration for symmetric (AES-256, DES/3DES) and asymmetric (RSA 4096-bit public

key, ECC) cryptography, along with SHA-256 hashing and true random number generator (TRNG) with 512-bits of entropy.

Product Availability and Support

The K32 L3 MCU family is expected to be available globally in June 2019 from NXP and its distribution partners with a suggested resale price starting at $1.99 (USD) at 10,000-unit quantities.

NXP enables developers through its MCUXpresso software and tools ecosystem, along with its FRDM-K32L3 development platform with a suggested resale price of $29.99 (USD). Third-party support is allowed from the broad ARM ecosystem.