*Product Overview*

# *What's new in 5V MCUs?*

Despite the move to lower supply voltages in general-purpose system designs, 5V circuitry continues to be a popular design approach due to the physics of signal-to-noise and the ubiquity of 5V sensors. However, selecting a 5V MCU doesn't mean that you need to compromise on modern MCU benefits like performance, low-power consumption, or security.

With the MSPM0H321x is a family of MCUs, designers can meet the design challenges of 5V systems while enhancing system security, power efficiency, and performance.

**So, what's new with the MSPM0H321x family of 5V MCUs?**

The MSPM0H321x family, including the MSPM0H3216, builds on the foundation of the MSPM0 ecosystem of common hardware, tools, and software libraries. These devices and resources enable hardware and software engineers to easily reuse existing code from MSPM0-based designs in a variety of applications - from power tools to automotive designs and even kitchen appliances (as shown in Figure 1).

**Figure 1. Example applications that can use MSPM0 MCUs**

These MCUs offer a high degree of pin-to-pin compatible functionality, helping expedite exchanging and upgrading devices. Software porting between devices within the MSPM0 family is also streamlined due to the common DriverLib API across all MSPM0 devices. MSPM0H321x MCUs deliver a mix of security, low-power operation, and performance.

**Security:** The MSPM0H321x 5V MCU family builds upon the security foundation of the MSPM0 platform, providing flexible, affordable security configuration capabilities. The Customer Secure Code (CSC) hardware security architecture enables designers to lock in a customizable root-of-trust in their design.

The CSC provides hardware features to enforce authenticated secure boot with anti-roll back protection. MSPM0H321x MCUs also support secure firmware updates in the field. As security becomes increasingly important in software-capable products, MSPM0H321x MCUs enable applications to meet current security requirements and be ready for future needs.

**Low-power:** MSPM0H321x MCUs deliver low-power performance and low-latency power mode transitions. This allows applications to "race to sleep," potentially saving more power. Applications can reach a low-power 3.5uA state in standby mode with retention of SRAM, CPU, and peripherals and exit back to run mode in just 20us with the MSPM0 system control (SYSCTL) architecture.

In scenarios where even lower latency is required to receive commands on a UART or I2C bus from STANDBY, the MSPM0H321x family supports asynchronous fast clock requests which can request a fast clock when incoming data is detected even before the CPU wakes up.

**Features and performance**: Despite the focus on low-power performance, the MSPM0H321x family also features a capable mix of analog and digital functions, enabled by an Arm® Cortex-M0+® CPU operating at 32MHz with the single cycle multiply extension paired with up to 64kB flash memory and 8kB SRAM. The 12-bit ADC samples at up to 1.5 MSPS and features up to 27 input channels to enable a variety of control and sensing applications.

The advanced control timer (TIMA) features enhanced PWM generation modes for complementary pairs with dead-banding and ultra-low-latency fault handling. In addition, the MSPM0H321x family will also offer a wide range of packages, including two options with 0.8mm pin pitch for ultra-low cost PCB assembly processes.

Since the introduction of the MCU, embedded engineers have continued to find new and creative ways to use these general-purpose devices. The MSPM0 portfolio includes devices that support 1.62V - 3.6V supply voltages, helping engineers adopt lower operating voltage which enables lower system power and can reduce cost requirements. However, there is still a need for modern MCUs with support for 5V supply voltages.

In applications with legacy 5V circuitry or complex noise immunity challenges, MSPM0H321x MCUs enable hardware designers to work natively in 5V systems and benefit from the innovative security, low-power, and performance features.

Get started today with ready-to-go evaluation tools:

- Visit the MSPM0H3216 product page for more information, data sheet, and reference manual.
- Order the LP-MSPM0H3216 evaluation module to get started today.

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