NEWS RELEASE

Maxim Integrated's Ultra-Low-Power Dual Core Microcontroller with BLE 5.2 Shrinks BOM Costs by Up to 33 Percent for IoT Applications
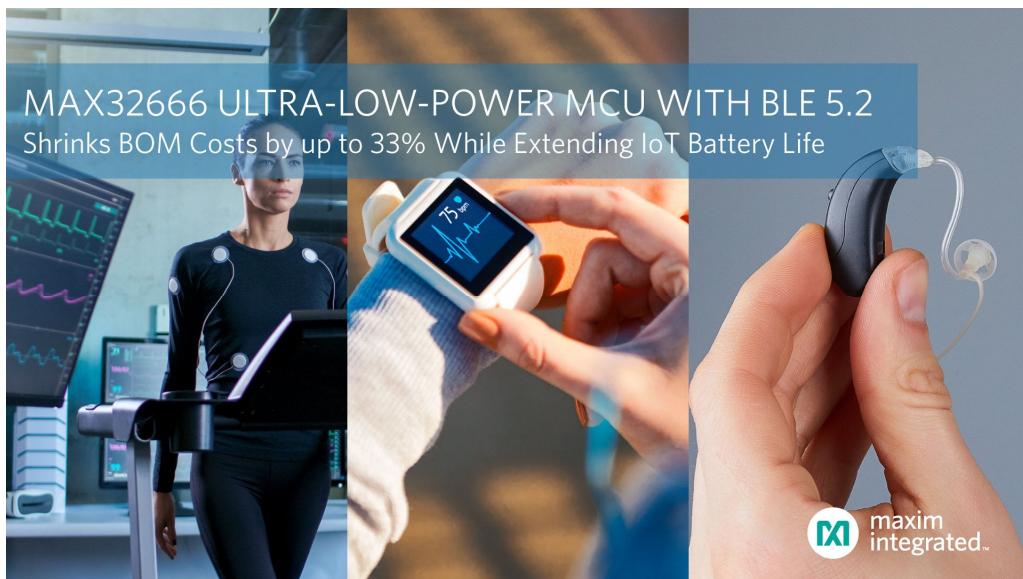
MAX32666 with wireless connectivity extends battery life and shrinks size of coin cell-operated devices

SAN JOSE, Calif.—Jul. 21, 2020—Designers of wirelessly connected, coin cell-operated internet of things (IoT) products can now reduce bill-of-materials (BOM) costs by one-third while also saving space and battery life with the MAX32666 microcontroller (MCU) from Maxim Integrated Products, Inc. (NASDAQ: MXIM). This ultra-low-power dual Arm® Cortex®-M4 MCU with floating-point unit (FPU) and Bluetooth Low Energy 5.2 (BLE 5.2) extends the device's battery life by combining robust memory, security, communications, power management and processing functions traditionally performed by multiple MCUs into a single device.

As IoT applications become more advanced, more MCUs are typically added to the system. Usually these advanced systems include a dedicated processor to handle the application, another processor acting as a sensor hub, a separate standalone BLE microcontroller to handle the wireless connectivity function, and in many cases, a power management IC (PMIC) to efficiently provide supply voltages to the MCUs.
However, this approach is proving to be unsustainable for IoT applications that are growing in complexity while still demanding smaller size and longer battery life.

The MAX32666 MCU is the latest addition to Maxim Integrated's smart, function-rich DARWIN family of high-performance MCUs. In contrast to traditional architectures, this MCU reduces form factor and design footprint, enabling IoT device designers to lower BOM costs by consolidating up to three sockets found in their current designs. This dual Cortex-M4F MCU provides efficient computation of complex functions, operating at up to 96MHz, which speeds up data processing by 50 percent over the closest competitor. To replace the need for a separate PMIC, the MAX32666 features an integrated single- inductor, multiple-output (SIMO) regulator, which extends the life for small-sized battery applications. The MCU offers BLE 5.2, supports up to 2Mbps of data throughput and long range (125kbps and 500kbps) and offers transceiver output power of +4.5dBm programmable down to -95dBm. It also protects applications from cybersecurity threats with trust protection unit (TPU) and big math acceleration for fast Elliptic Curve Digital Signature Algorithm (ECDSA). The IC's hardware accelerators provide AES-128, -192 and -256 encryption, while TRNG seed generator and SHA-2 accelerator enhance security. It also protects IP firmware with secure bootloader. The MAX32666 has an impressive on-board memory capacity with up to 1MB flash memory and 560KB of SRAM with optional Error Correcting Code (ECC) for the most robust applications, as well as multiple high-speed peripherals. It can manage more data and accommodate bigger applications without running out of code space through efficient operation – all within a best-in-class power profile.

MAX32666 ULTRA-LOW-POWER MCU WITH BLE 5.2
Shrinks BOM Costs by up to 33% While Extending IoT Battery Life

Key Advantages

- **Reliability:** Adds an extra level of robustness with integrated ECC on Flash, SRAM and Cache memories, preventing undesirable bit flips.
- **Low Cost:** Combines two microcontroller cores, a Bluetooth radio with dedicated stack core, power management, security and significant memory into one IC. Reduces BOM costs by making use of dual 96MHz Cortex-M4 with FPU as well as large on-board memory of 1MB Flash and 560KB SRAM.
- **Saves Board Space:** Integrates multiple functions into a single IC with small 3.8mm x 4.2mm WLP footprint.
- **Low Power:** Preserves battery life of coin-cell battery devices through low active-mode power; Offers dynamic voltage scaling for minimized active core power consumption; Enables 27.3uA/MHz at 3.3V executing from cache memory; Multiple power down modes support longer battery life, achieving 1.2uA at 3.3V in the lowest power mode.

Commentary

- "The robust installed base of IoT devices is expected to grow at a CAGR of 12 percent per year through 2030 (from 2015), when it will reach more than 80 billion units," said Julian Watson, principal analyst, IoT at Omdia. "The critical component for sustaining the growth rate is the continued ability to add functionality for these devices while improving efficiency so that end-users will appreciate their value and convenience. Clearly, Maxim Integrated is aiming to advance IoT ubiquity with its new family of DARWIN microcontrollers."
- "It's possible to keep adding microcontrollers to any IoT application, but frequent battery replacements conflict with end-user utility and convenience," said Kris Ardis, executive director for the Micros, Security and Software Business Unit at Maxim Integrated. "By applying the power-saving advantages of wearable technology to the broader spectrum of IoT applications, this new family of processors reduces battery replacements and improves computing performance."

About Maxim Integrated

Maxim Integrated develops innovative analog and mixed-signal products and technologies to make systems smaller and smarter, with enhanced security and increased energy efficiency. We are empowering design innovation for our automotive, industrial, healthcare, mobile consumer and cloud data center customers to deliver industry-leading solutions that help change the world.