STMicroelectronics Shatters Performance Limitations for Ultra Low-Power Applications with New STM32L4 Microcontrollers

New STM32 series with ARM® Cortex®-M4 core and innovative ultra-low-power technologies sets industry's highest EEMBC™ ULPBench® efficiency score

Geneva, February 19, 2015 – STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, has combined its ultra low-power microcontroller technology with ARM® Cortex®-M4 know-how to create the STM32L4 series for next-generation energy-conscious consumer, industrial, medical, and metering applications.

The first two microcontrollers in the series, the STM32L476 and STM32L486, feature the 80MHz ARM Cortex-M4 core with DSP and floating-point unit (FPU). With the added advantage of the ST ART Accelerator™, which allows zero-wait execution from Flash, the devices achieve up to 100 DMIPS at just 100µA/MHz active power consumption. Up to 1MB of dual-bank Flash supports sophisticated applications and read-while-write capability in addition to 128KB of SRAM.

STM32L4 microcontrollers leverage the full richness of ST's low-power technologies, including dynamic voltage scaling to balance power consumption with processing demand, smart architecture with FlexPowerControl, and seven power-management modes with sub-mode options. These include Stop, Standby, and Shutdown with current as low as 30nA. ST's Batch Acquisition Mode (BAM) allows efficient data exchange with communication peripherals while in low-power mode.

The new devices have scored 123 in the standardized EEMBC™ ULPBench® tests that compare the efficiency of ultra-low-power microcontrollers. "The STM32L4's ULPBench score of 123 is the best in the industry today, and demonstrates that designers can now get higher performance and larger memory without trading power consumption," said Michel Buffa, General Manager, Microcontroller Division, STMicroelectronics.

The overall low power consumption, high performance and DSP capability of the Cortex-M4 core, smart analog features, and extensive digital connectivity of the new STM32L4 series make these devices ideal for smart connected and Internet-of-Things (IoT) applications, as well as a wide variety of industrial, medical, and consumer products.

STM32L4 devices are sampling now to lead customers, and general release is scheduled for Q2 2015. The STM32L476 is priced from $3.40 in the LQFP64 package, for orders of 10,000 pieces.

Further Technical Information:

In addition to the combination of low-power technologies, the STM32L4 also benefits from a smart architecture and peripherals to maximize efficiency and performance while ensuring low power consumption. Digital peripherals include USB OTG full speed with a dedicated supply that allows customers to maintain USB communication even when the system is powered at 1.8V. There is also a Digital Filter for Sigma-Delta Modulators (DFSDM) peripheral for connecting external sigma-delta modulators or PDM (Pulse Density Modulation) microphones.

Analog peripherals include three 12-bit/5MSps ADCs featuring smart operation that allows sample acquisition at low speed drawing only few tens of µA to limit maximum current, or at maximum speed so as to return quickly to ultra-low-power mode. The ADCs can provide up to 16-bit resolution with hardware oversampling. There is also a voltage-reference buffer that provides a reference for ADCs, DACs, or for external components through the VREF+ pin. In addition there are two 12-bit DACs with sample and hold capability, which can operate during the MCU's deep power-saving modes when overall current is reduced to a few hundred nA. Other analog peripherals include two ultra low-power comparators that draw as little as 300nA, as well as two op-amps with external or internal feedback routing and Programmable Gain Amplifier (PGA) capability.

The STM32L4 smart architecture gives a further boost to performance and efficiency by enabling concurrent transfers between the core, DMA controllers, memories, and peripherals. FlexPowerControl is another aspect of the smart architecture that assists power-saving design by retaining I/O levels when the device is in low-power mode, keeping SRAM in standby, and managing independent power supplies for specific peripherals and I/Os.

The STM32L486 integrates a hardware cryptographic co-processor (AES 256-bit). Combined with other STM32L4 features such as an independent battery-backup domain and tamper inputs, this provides a strong platform for security-oriented applications such as smart meters.

For applications where heat dissipation is a challenge, such as when used in confined environments or high ambient temperatures, high-temperature grade devices specified up to 125°C are available.

About STMicroelectronics
ST is a global leader in the semiconductor market serving customers across the spectrum of sense and power and automotive products and embedded processing solutions. From energy management and savings to trust and data security, from healthcare and wellness to smart consumer devices, in the home, car and office, at work and at play, ST is found everywhere microelectronics make a positive and innovative contribution to people's life. By getting more from technology to get more from life, ST stands for life.augmented.

In 2014, the Company's net revenues were $7.40 billion. Further information on ST can be found at www.st.com.

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