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STMicroelectronics Outlines Always-On 6-Axis Ultra-Performance Accelerometer/Gyroscope Combo that Drops the Power/Space Bar

New power-efficient, low-noise device is ideally suited to Internet of Things, wearable, indoor navigation, and handheld applications

Geneva, September 9, 2014 – STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, the world's top MEMS (Micro-Electro-Mechanical Systems) manufacturer and the leading supplier of MEMS for consumer and mobile applications¹, today announced its development of the first [iNEMO™ Ultra product - an always-on, high-performance 6-axis combination accelerometer and gyroscope](#) that sets new standards for device and system power efficiency, signal noise, and performance in motion sensors. In concert with ST's ultra-low-power STM32 microcontrollers, the [LSM6DS3](#) combos will create new possibilities for the development of battery-powered smart sensor systems to be embedded in mobile and wearable devices and innovative objects for the Internet of Things (IoT).

The tiny (2.5mm x 3.0mm x 0.8mm), iNEMO Ultra 6-axis inertial-sensor combo (3-axis accelerometer/3-axis gyroscope) delivers industry-leading noise performance² while effectively managing system power with state-of-the-art technology that in testing has proven to be typically 20% more energy-efficient than the best alternative combos in low-power mode while delivering outstanding performance and protecting valuable board real estate.

This is in part, due to the market's largest "smart" FIFO (First-In First-Out) memory (8kbytes) — at least 2 times larger than any else available. This flexible memory allows the [LSM6DS3](#) to save and batch more data before waking up the system processor, saving overall system power, too. Moreover, ST has leveraged its robust and mature manufacturing processes for the production of its industry-leading micro-machined accelerometers and gyroscopes, while manufacturing its IC interfaces

¹ Source: IHS Consumer and Mobile MEMS Market Tracker H1 2013

² Accelerometer = 90 $\mu\text{g}/\sqrt{\text{Hz}}$ (typ) in high-performance mode with Output Data Rate (ODR) @104Hz and 0.6 mg-rms (typ) in high-performance mode ODR @104Hz.
Gyroscope = 0.007 $^{\circ}/\text{s}/\sqrt{\text{Hz}}$ (typ) in high-performance mode @10Hz and 0.07 $^{\circ}/\text{s}$ -rms in high-performance mode with ODR @208Hz.

using CMOS technology. This choice supports trimming of dedicated circuits to better match sensing-element characteristics.

“Our new 6-axis ultra-combo is designed to operate at the lowest power and best noise density in the market and will make Internet-of-Things devices far more efficient and convenient,” said Benedetto Vigna, ST Executive Vice President and General Manager of the Analog, MEMS & Sensors Group. “With this latest addition to our industry-leading portfolio, our mastery of our own full supply chain, and the expertise and leadership to build system-level efficiency into everything we make, ST continues to raise the bar for motion-sensor performance.”

The LSM6DS3 will be delivered as an optimized 2-chip system-in-package featuring high-performance 3-axis digital accelerometer and 3-axis digital gyroscope with integrated power-efficient modes down to 0.6mA in always-on working mode. The new combo combines always-on low-power features with superior sensing precision for best-in-class motion detection and analysis with ultra-low noise.

The LSM6DS3’s event-detection interrupts enable efficient and reliable motion tracking and context awareness that is implemented in hardware. This allows for recognition of free-fall events, 6D orientation, tap and double-tap sensing, activity or inactivity, and wake-up events. With ST’s experience in supporting the requirements of the main operating systems, the LSM6DS3 will be able to efficiently process real, virtual, and batch-mode sensors, saving power and enabling faster system reaction time. Indeed, the new combo is designed to implement in hardware Significant Motion, Tilt, Pedometer Functions, and Time Stamp, and to support the data acquisition of an external magnetometer with both hard and soft iron correction.

Finally, the LSM6DS3 will offer hardware flexibility to connect pins with different mode connections to external sensors to fulfill additional functionalities as a sensor hub, auxiliary SPI (Serial Peripheral Interface), and other vital capabilities.

The [LSM6DS3](#) combo will be available in Q4 2014.

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 2013, the Company’s net revenues were \$8.08 billion. Further information on ST can be found at www.st.com.

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