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Press release

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STMicroelectronics Bridges the Gap Between Bulk and Surface Micromachining for Critical Sensors

- *THELMA60 manufacturing process enters full production*
- *Delivers sensitivity of Bulk micromachining for near-Surface micromachining cost*

Geneva, November 5, 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[1] as well as automotive applications[2], today announced that it had started production of MEMS sensors using its newly qualified, proprietary THELMA60 (60µm Thick Epi-poly Layer for Micro-gyroscopes and Accelerometers) surface-micromachining fabrication process.

Semiconductor manufacturers have relied in the past on two manufacturing processes for the accurate high-volume production of three-dimensional MEMS devices, including accelerometers, gyroscopes, microphones, and pressure sensors. Surface micromachining has been viewed as more cost-effective whereas bulk micromachining was often chosen for higher sensitivity and precision. The ST innovation combines the advantages of both approaches, opening up the possibility to drive surface-micromachined MEMS into new markets and applications.

"Several companies have tried and failed to bring the precision and sensitivity of bulk micromachining to meet the higher-volume efficiencies of the growing IoT, Consumer, and Mobile markets," said Jean-Christophe Eloy, President & CEO, Yole Développement. "ST has executed an innovative and effective end-run on the problem with its new 60µm epitaxial layer surface-micromachining process."

"The introduction of ST's THELMA60 surface-micromachining process starts a new era for inertial sensors. As already proven by a number of design wins that are now entering production, THELMA60 is the ideal solution to increase cost efficiency for challenging applications that demand high sensitivity like implantable medical devices and high-end sensors for aerospace systems and seismic exploration – once the exclusive domain of bulk micromachining," said Benedetto Vigna, Executive Vice President and General Manager Analog, MEMS and Sensors Group, STMicroelectronics. "After we have revolutionized the market for consumer inertial sensors, we are now set to change the game for high-end sensor applications. This is just the start."

[1] Source: IHS Consumer and Mobile MEMS Market Tracker H1 2014
[2] Source: IHS Market Tracker Automotive MEMS H1 2014

Technical notes to Editors:

Surface micromachining forms structures in a “thick” crystalline layer (epitaxial or epi-) grown on top of a silicon wafer. Processing of this layer—typically up to 25 micrometers thick, or about the diameter of a white blood cell—including deposition of new material and cutting and photolithographic masking, creates the mass of the moving structure in the MEMS device; the size of this mass is linked to the product’s sensitivity. Surface micromachining is extremely efficient and cost-effective, lending itself to consumer, mobile, and Internet of Things (IoT) applications.

In contrast, Bulk micromachining builds the microstructures directly into the silicon substrate and therefore the mass of the moving structure—and its sensitivity and precision—is higher. Naturally, this increased sensitivity comes at greater expense, aiming its usefulness to medical, aerospace, automotive, and other higher-end industrial applications.

Now, ST has increased the epitaxial layer to 60 microns with the benefit of increased sensitivity in the range traditionally occupied by bulk MEMS.

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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