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STMicroelectronics Now Sampling Embedded PCM for Automotive Microcontrollers

- *Innovative embedded Phase-Change Memory (ePCM) for automotive MCUs sampling now*
- *Initial performance benchmarks presented at IEDM 2018*
- *Will support faster and more complex computing needs in automotive systems*

Geneva, December 10, 2018 – STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, has presented at IEDM2018 architecture and performance benchmarks of a technology based on 28nm FD-SOI with embedded Phase-Change Memory (ePCM) designed for its automotive microcontrollers (MCUs). ST's products based on ePCM are sampling now to alpha customers, with field trials meeting the requirements of automotive applications and full technology qualification expected in 2020. These MCUs—the world's first to use ePCM—will target powertrain systems, advanced and secure gateways, safety/ADAS applications, and Vehicle Electrification.

With more demanding automotive applications, constraints on processing power, power consumption mitigation, and larger memory requirements are pushing for new automotive MCU architectures. One of the most challenging demands is for larger embedded memories as firmware complexity and size increase dramatically. ePCM presents a solution to these chip- and system-level challenges, meeting automotive requirements for AEC-Q100 Grade 0, operating at temperature up to +165°C. In addition, ST's technology assures firmware/data retention through high-temperature soldering reflow processes and immunity to radiation, for additional data safety.

ST presented an update on the architecture and performance of a 16Mb ePCM array for a 28nm FD-SOI automotive MCU at the 2018 International Electron Devices Meeting (IEDM) in San Francisco on December 4.

"Having applied ST's process, design, technology, and application expertise to ePCM, we've developed an innovative recipe that makes ST the very first to combine this non-volatile memory with 28nm FD-SOI for high-performance, low-power automotive microcontrollers," said Marco Monti, President Automotive and Discrete Group, STMicroelectronics. *"With samples already in some lead-customers' hands, we're confirming the outstanding temperature performance of ePCM and its ability to meet all automotive standards, further assuring our confidence in its market adoption and success."*

Further technical information:

[Phase-Change Memory \(PCM\)](#), which is made using a Germanium Antimony Tellurium (GST) alloy, takes advantage of rapid heat-controlled changes in the material's physical property between amorphous and crystalline states. These states, which correspond to logic 0 and 1, are electrically differentiated by high resistance in the amorphous state (logic 0) and low resistance in the crystalline state (logic 1). Moreover, unlike Flash-based memories that require at least a byte- or sector-erase cycle before reprogramming, PCM technology offers single-bit alterability, which simplifies software handling of data storage and ST's implementation benefits from patented technology related to the memory cell and to the GST alloy to support high temperature data retention.

About STMicroelectronics

ST is a global semiconductor leader delivering intelligent and energy-efficient products and solutions that power the electronics at the heart of everyday life. ST's products are found everywhere today, and together with our customers, we are enabling smarter driving and smarter factories, cities and homes, along with the next generation of mobile and Internet of Things devices. By getting more from technology to get more from life, ST stands for life.augmented.

In 2017, the Company's net revenues were \$8.35 billion, serving more than 100,000 customers worldwide. Further information can be found at www.st.com.

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