Nanomech™ embedded memory technology from Cavendish Kinetics

June 8 2004

Cavendish Kinetics, announced a major new technology which will offer the lowest power and entry-cost embedded non-volatile memory (NVM) in the industry. The company's Nanomech™ technology is capable of simple incorporation into standard CMOS and other processes and will offer semiconductor companies and foundries a lower power, higher speed alternative to embedded Fuse, Flash and EEPROM. The company said it intends to introduce its first product, in the form of licensable intellectual property for an electronically settable fuse, in the third quarter of 2004.

Embedded memory structures based on Nanomech technology can withstand operating temperatures up to +200 degrees Centigrade, well in excess of the +125 degrees Centigrade normally associated with semiconductor products. Similarly the radiation tolerance specifications exceed those of the underlying Silicon. Furthermore, because of the negligible mass of the structures, a force of over 100 million times the force of gravity would be required to make a memory cell change state. In addition to its suitability for a vast array of embedded uses, these attributes alone make the technology ideal for automotive, medical, aerospace, military, industrial and many other applications.

The principle of operation is that a conducting metal bar, etched using using microelectromechanical systems (MEMS) processes, is supported and suspended above a contact electrode. By introducing a charge on to the contact electrode, or on to a separate gate electrode, the bar is attracted and deformed by electrostatic forces until it touches the

contact. Each sub-micron structure represents one bit of memory and requires only 25 PicoJoules to program it, thereby giving rise to the exceptionally low write/erase power requirements. The technology is process scaleable and can be used with process nodes to below 45 nanometers.

The company will initially target the e-fuse market in embedded applications including trimming and feature selection for analog and mixed signal, redundancy, small user-programmable ROM arrays (UPROMS) as well as chip ID. Once the OTP and MTP products are announced in 2005, the company will broaden its customer base while building on the relationships already in place with high growth high volume applications in the portable product, Smartcard and automotive sectors.

Original press release: www.cavendish-kinetics.com/

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