



FOR IMMEDIATE RELEASE

Media Contact:
Justine Houston-Brown
Lages & Associates
(949) 453-8080
justine@lages.com

Startup Tunes MEMS Switch for IoT

Menlo Reports Progress at Fab, Power/RF Uses

SAN JOSE, Calif. – December 26, 2017 – A startup spun out of GE reported progress making and getting its MEMS-based switch into a broad array of systems on the Internet of Things. Menlo Microsystems sees its chip, already designed into GE medical systems, as a power actuator and relay for a variety of many industrial IoT uses as well as an RF switch for mobile systems.

Menlo's electrostatic switch, first described in 2014, uses novel metal alloys on a glass substrate to create a beam that under current is pulled down to a gate to complete a contact. It requires significantly less power to activate and remain on than a solid-state switch, and products for many vertical markets can be created using a single proprietary process.

The device's low power consumption lets it handle high current power switching jobs. In addition, it does not generate heat like traditional power switches and relays that need large, expensive heat sinks.

Currently the switch is made in a small research fab at GE. Menlo expects it to be in production in mid-2018 at a commercial MEMS fab, Silex Microsystems of Sweden, where it is currently running wafers with working devices.

"Our biggest challenge right now is getting the technology in a commercial fab and

getting it qualified,” said Russ Garcia, Menlo’s CEO.

The biggest opportunities for the device are in replacing electromagnetic, electromechanical and solid-state devices in a wide variety of relays and power switches. Menlo expects to roll out in the next several months a variety of reference boards using its chips for industrial automation, robotics and home and building automation.

One of biggest issues for IoT devices such as Nest’s smart thermostat is in efficiently turning on or off power hungry systems such as HVACs, something Menlo’s switches can do “while drawing almost no current,” Garcia said. “We offer one or two orders of magnitude improvements in power switch size and power consumption,” he added.

The design was incubated in a 12-year research effort on MEMS switches inside GE. “They concluded MEMS reliability problems were materials issues, and developed unique alloys for the switch’s beams and contacts and a novel glass substrate that could reliably handle kilowatts of power over billions of on/off switches,” he said.

GE’s medical division will be the first user of the chips, replacing with its chips the complex arrays of pin diodes currently in MRI systems. The company expects the MEMS switches could slash \$10,000 off the cost of each MRI system. “Today, they have to pay five PhDs to tune each machine with pin diodes, but with the MEMS switch they can automate programing them,” Garcia said.

GE gets an exclusive head start using the chips in its MRI systems. However, the startup is already in discussions with other MRI makers who will be able to use the chips in the future. “GE wants this business to scale to create a new strategic component supplier,” he said.

Menlo also sees uses of the chips in RF switches. It already is designed into a military radio expected to ship next fall that delivers a ten-fold increase in power output with a ten-fold decrease in power dissipation.

Separately, the startup expects to license its technology to vendors who make RF switches for smartphones such as Peregrine, Qorvo and Skyworks.

“I don’t want to make 15-cent switches,” said Garcia, explaining the licensing approach. “We have collected NRE dollars from a couple players on phase one of their licensing evaluations,” he said.

Menlo raised \$22.5 million a year ago from investors including Corning, GE Ventures and Microsemi. It hopes its multiple market opportunities enable it to be cash positive by mid-2019. “My goal is not to raise any more money, our margins are very strong especially in the new fab, and some of our switches will sell for \$20-\$100 ASPs,” Garcia said.

— *Rick Merritt, Silicon Valley Bureau Chief, EE Times*

About Menlo Micro

Headquartered in Irvine, California, Menlo Micro is reimagining one of the most fundamental building blocks of electronic systems – the electronic switch. The company’s Digital-Micro-Switch platform is a game changer for those who design electronic systems, serving multiple industries including next generation 5G mobile networks, industrial IoT markets, battery management, home-automation, electronic vehicles and medical instrumentation. Menlo Micro is backed by GE Ventures, with investments from Corning, Microsemi Corporation, and Paladin Capital Group.

###