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Menlo Micro Reinvents the RF Switch – Greater than 10X Performance Gain

Menlo Micro is scaling GE's Digital-Micro-Switch technology in collaboration with Corning Incorporated to power IOT and 5G applications

MOBILE WORLD CONGRESS, Barcelona, Spain – February 27, 2017 – Today, Menlo Micro, announces its revolutionary Digital-Micro-Switch (DMS) technology platform. Now qualified for production, this next-generation wafer-level process enables the fabrication of micro-mechanical switches for both power and RF applications. With the DMS process, Menlo has demonstrated an industry leading $R_{on}C_{off}$ performance below 50 fs, and will sample devices at 10 fs, a 10x improvement compared to traditional switches, in the next 12-18 months. $R_{on}C_{off}$ is the key figure-of-merit used by the semiconductor industry to quantify the quality or performance of an RF switch. With the proliferation of new frequency bands, including much higher frequencies, the performance of the RF switch will become an increasingly important factor in enabling higher data-rates, longer battery life, and much more flexible architectures for 5G applications. Menlo Micro will demonstrate this technology at Mobile World Congress this week in Barcelona, Spain, Hall 6, Meeting Room, 6O24MR.

Using proprietary materials, designs, and wafer-level processing techniques licensed exclusively from General Electric, Menlo's DMS technology has proven reliability and can not only handle kW of power, but can be scaled down in size and cost to making it cost-competitive with silicon-on-insulator (SOI). The switches are made from proprietary metal alloys, plated onto glass wafers with through glass vias (TGV) from supplier and investor Corning

Incorporated (NYSE: GLW), resulting in extremely high reliability and improved RF performance.

“We see the DMS platform, our re-invention of the switch, as a true revolution in the industry,” said Menlo SVP Product Development, Chris Giovanniello. “The fully-isolating substrate, combined with the elimination of the transistor, allows us to achieve performance previously unattainable with purely solid-state technologies such as SOI. We’re not talking about small, incremental improvements to RonCoff, but more than an order of magnitude of improvement in the next 18 months over what is in production today.”

In addition to the key figure-of-merit RonCoff, Menlo has demonstrated linearity above +90dBm, which is 15-20dB better than what is traditionally considered best-in-class performance. Switches that the company now has in development will have insertion loss < 0.3dB at 12GHz and cover bandwidths from DC-18GHz, with the ability to extend up to even higher frequencies, including mmWave.

Menlo and Corning are working together to establish a supply chain for high-performance semiconductor glass wafers with TGV technology, and scale-up of the manufacturing processes.

“Trends around higher speed, miniaturization and interconnectivity are all driving the increased use of glass in many electronics applications. Menlo’s new products, enabled by Corning’s TGV solution and the inherent properties of our glass, have the potential to revolutionize whole subsets of the industry,” said David Velasquez, business director, Corning Precision Glass Solutions. “We expect many other new applications to take advantage of the superior properties of our precision glass solutions in the near future.”

In addition to the performance advantages, the Menlo DMS process is typically 12 metal layers, thanks to advancements in high-temperature, high-reliability alloys. With only half of the manufacturing steps required of a typical CMOS wafer, the process can be scaled to be cost-competitive with SOI, enabling high-volume applications such as antenna switch modules (ASM), filters, tuning networks, and band-switching for next-generation 5G smartphones and communications systems. Menlo is actively engaged with a number of technology partners to license the DMS technology into the consumer mobile handset market.

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 Incorporated, Microsemi Corporation, and Paladin Capital Group. For more information, visit www.menlomicro.com and @menlomicro on Twitter.

About Corning

Corning (<http://www.corning.com>) is one of the world's leading innovators in materials science. For more than 160 years, Corning has applied its unparalleled expertise in specialty glass, ceramics, and optical physics to develop products that have created new industries and transformed people's lives. Corning succeeds through sustained investment in R&D, a unique combination of material and process innovation, and close collaboration with customers to solve tough technology challenges. Corning's businesses and markets are constantly evolving. Today, Corning's products enable diverse industries such as consumer electronics, telecommunications, transportation, and life sciences. They include damage-resistant cover glass for smartphones and tablets; precision glass for advanced displays; optical fiber, wireless technologies, and connectivity solutions for high-speed communications networks; trusted products that accelerate drug discovery and manufacturing; and emissions-control products for cars, trucks, and off-road vehicles.

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