Hermetic System-in-Package for High Power RF MEMS Switch

Speaker: Chris Keimel, Kaustubh Nagarkar – Meino Micro - Irvine, CA 92618

E-Mail: chris.keimel@menlomicro.com

kaustubh.nagarkar@menlomicro.com

Abstract

A new RF MEMS switch package has been developed that is capable of handling up to 25W continuous wave (CW) power, with insertion loss <0.3dB, and isolation of -25dB, while operating at DC to 3 GHz. The Menlo Micro Digital-Micro-Switch technology platform is focused on applications such as high-power tunable resonators and filters, as well as electronically steerable antennas and phase shifters, which will be briefly discussed in the presentation. The high reliability device/package is capable to withstand over 3 Billion switching operations. The package consists of a wafer-level hermetic sealed glass-based micro-mechanical switch device, integrated with a stacked gate control driver silicon chip in a low-profile organic System-in-Package (SiP) configuration. An overview of the construction of the metal-MEMS device, wafer-level hermetic sealing, and package design will be discussed along with simulated and experimental RF test results. The RF MEMS device itself has low I^2R losses and the effect of including the gate control driver chip will be presented. Thermal implications of high-power handling at various temperatures will also be discussed. The presentation will conclude with an overview of the advanced packaging roadmap for future product designs.