

Abstract

Roshdy AbolAzayem El-Sayed AbdelRassoul

Triangular-shaped RF MEMS Switched Air Gap Capacitor in imec's SiGe-MEMS Platform

Passive elements such as tunable capacitors are highly needed in wireless communication applications such as Voltage Controlled Oscillators (VCO) and switchable or tunable filters. In this paper, the design and modeling of a triangular shaped RF-MEMS switched air-gap capacitor using imec's SiGe-MEMS technology is presented. Low actuation voltage ($\ll 3$ Volts), a capacitance ratio of around 7, an up-state capacitance of 20 ff and a high electrical quality factor (> 100) were achieved. A serpentine suspension was employed to build a low stiffness (less than 0.07 N/m) structure capable of achieving the low actuation voltage.