Abstracts

Digital-type RF MEMS switched capacitors

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This paper presents digital-type RF MEMS switched capacitors built in a coplanar waveguide (CPW) configuration. In this design, a MEMS shunt bridge is fabricated over an MIM capacitor. When the bridge is in the upstate position, the CPW line is loaded mainly by the up-state MEMS bridge capacitance. When the MEMS bridge is pulled down, the line is loaded by the MIM capacitor. As a result we obtain a digital-type switched capacitor suitable for 0.5-6 GHz operation. Switched capacitors of different values (300 fF, 600 fF, 750 fF, 1.5 pF, 2.25 pF) were fabricated and resulted in high-Q (>100) designs at 1 GHz. Also a 2-bit capacitor array was demonstrated. The values of Q are limited by metal-to-metal contact resistance (0.8 /spl Omega/) and the calibration accuracy of the method used.

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