
Design and Simulation of Frequency Radio Frequencies in High Frequency Adjustable Filters

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Micro-Electro-Mechanical-Systems, by the use of high electronic fabrication technology and mechanical properties have progressed so much in all domains of technology. RF filters are of such applications, in which tuning and many other facilities have become possible by the utilization of MEMS, especially application of capacitive switches. In this thesis, related and required introduction, comprehensive explanation of details, types, advantages and defects of using such structure have been brought. In continuation of the thesis, the governing theory on such structures in order to provide the fundamental necessities for the simulation and studying them have been said. As long as, the main performing mechanism of the structure is the application of the stress on the moving electrode of a capacitive switch MEMS, its theory has been under the most attention of the author. In this work a combination of COMSOL and MATLAB to simulate the structure has been used. Of course the reason why COMSOL is used has been pointed out. By such availability of simulation it would become possible for the author to design, simulate and present a new structure being driven with 3 to 4 less functioning bias voltage and more planar electrode sensitivity.

Keywords : MEMS, Capacitive Switch MEMS, Moving Electrode, Electrostatic Force, COMSOL and MATLAB

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