

A Study of Geometrical Shape of Central Plate in Electrostatic Actuation

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Abstract

This study is performed to know which central plate geometry is best suited for electrostatically actuated switch. The simulation is carried out in COMSOL Multiphysics, where user is free to model the geometry without depth knowledge about geometrical dependency of electrostatic. The study of the centrally suspended geometrical models such as circle, square and rectangle suspended by two short anchors is done. It is found that rectangular central plate suspended plate shows good deflection compared to other three geometries with constant voltage between for all three geometries.

Reference

[1] <http://en.wikipedia.org/wiki/Anchor>.

[2] Chengzhang Li and Michele H. Miller “Comparisons of Anchor Designs for MEMS Resonant Mass Sensors” Department of Mechanical Engineering-Engineering Mechanics Michigan Technological University Houghton, Michigan, USA.

[3] Chang Liu “Foundation of MEMS” Electrical and computer Department University of Illionis at Urbana-Champaign Pearson Education International

Figures used in the abstract

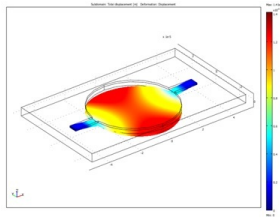


Figure 1: Figure 1 Circular plate suspended by two short anchors showing deflection due to applied voltage.

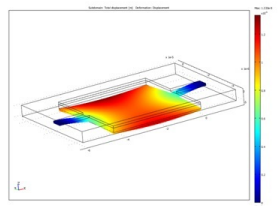


Figure 2: Figure 2 Square plate suspended by two short anchors showing deflection due to applied voltage.

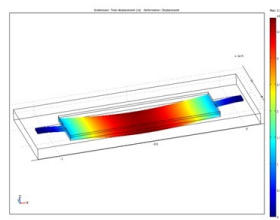


Figure 3: Figure 3 Rectangular plate suspended by two short anchors showing deflection due to applied voltage.