Abstract

Micro-electro-mechanical systems (MEMS) is the integration of mechanical and electrical components that can sense the environment, process and analyze information, and respond in order to control the environment for some desired outcome. MEMS are nowadays becomes increasingly popular due to their high isolation and low insertion loss. The capacitance values of MEMS-based variable capacitors and tuning range are too small, typically less than a few pF. The work presented in this paper involves design, simulation and application of micro-cantilever beam as a variable capacitor. The device consists of array of cantilever beam with variable length, suspended over a bottom electrode. By applying a voltage between the electrodes, the
electrostatic force pulls the beams in one-by-one realizing a digital increase in capacitance. The change in length of the beam influences the pull-in voltage while the effect of beam width on the pull-in voltage is negligible.

References

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