

Review on Low Actuation Voltage RF Mems Switches

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Abstract : In modern communication systems, it is highly demanded to achieve high performance with minimal power consumption. Low actuation voltage RF MEMS (Micro-Electro-Mechanical Systems) switches represent a significant advancement in this regard. These switches, with their ability to operate at lower voltages, offer promising solutions for enhancing connectivity while minimizing energy consumption. Microelectromechanical switches are good alternatives for electronic and mechanical switches due to their low insertion loss, high isolation, and fast switching speeds. They have attracted more attention in recent years. Most of the presented RF MEMS switches use electrostatic actuators due to their low power consumption. Low actuation voltage RF MEMS switches are among the important issues that have been investigated in research articles. The actuation voltage can be reduced by different methods. One usually implemented method is low spring constant structures. However, despite their numerous benefits, challenges remain in the widespread adoption of low-actuation voltage RF MEMS switches. Issues related to reliability, durability, and manufacturing scalability need to be addressed to realize their full potential in commercial applications. While overcoming certain challenges, their exceptional performance characteristics and compatibility with miniaturized electronic systems make them a promising choice for next-generation wireless communication and RF applications. In this paper, some previous works that proposed low-voltage actuation RF MEMS switches are investigated and analyzed.

Keywords : RF MEMS switches, low actuation voltage, small spring constant structures, electrostatic actuation

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