

Master 2009 Md. Asaduzzaman Redesign of a Latching MEMS Switch for RF Applications

ABSTRACT - Masterthesis

Micro electro mechanical systems (MEMS) have experienced an explosive growth over the past few years driven mainly by its physical properties and its promising technological applications in many different fields, particularly in space and RF systems. MEMS technology exhibits greater advantages over the existing semiconductor switches.

In this thesis, RF performances of a two hot arms actuator MEMS switch have been investigated. The switch is designed and simulated using CST Microwave Studio. To get different parameters of transmission line, AWR Microwave Office has been used.

The simulated results show that the designed MEMS switch performed well at high frequency. At OFF state the return loss S₁₁ drops nearly to zero dB and the isolation S₂₁, become lower than -50 dB at 1 GHz and -35 dB at 10 GHz which indicates the high isolation. At ON state position the simulation exhibits very low insertion loss, S₂₁, < 0.16 dB at 10 GHz and return loss S₁₁ < -19 dB at 10 GHz. Even at more high frequency insertion loss is very low as S₂₁< 0.22 dB and return loss S₁₁ < -18 dB at 39.5 GHz.