Abstracts

Monolithic transistor SPST switch for L-band

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A comparison of single-pole single-throw switch topologies is presented in this paper. A three-MESFET monolithic GaAs switch was designed, for 2-GHz operation, fabricated and tested in three different bias conditions: V/sub bias/ = 0 (self-bias); I/sub bias/ = 0 (floating); and V/sub bias/ /spl ne/ 0, I/sub bias/ /spl ne/ 0 (biased). It will be shown that a floating configuration presents on-state lower insertion loss (IL) (/spl sim/1.7 dB). However, the off-state isolation has the same order of magnitude in all three bias conditions (typically 50 dB). Comparing measurements and simulations, the best available nonlinear model for the floating bias operation was selected. Finally, several resonant topologies were studied and a new topology is proposed to increase the off-state isolation without degrading the on-state IL. The advantages and drawbacks of resonant topologies over nonresonant configurations are also discussed, taking into account technology constraints and operation frequency. A solution to reduce the inductor value is proposed.

❑ Return to main document.