Abstracts

On-state distortion in high electron mobility transistor microwave and RF switch control circuits

R.H. Caverly and K.J. Heissler. "On-state distortion in high electron mobility transistor microwave and RF switch control circuits." 2000 Transactions on Microwave Theory and Techniques 48.1 (Jan. 2000 [T-MTT]): 98-103.

The origin of the distortion generating mechanism in microwave and RF control circuits using high electron-mobility transistors (HEMTs) is presented in this paper. A model is presented for predicting the distortion in series-connected HEMT switches. The theoretical discussion shows that turn-off voltages in the range of 1.0-1.5 V provide the lowest distortion in series switch configurations. A comparison of the HEMT snitch with MESFET switches shows that the HEMT switch generates more distortion than its MESFET counterpart. In addition, the frequency response of HEMT switches is the opposite of the MESFET switch, with less distortion at low frequencies. The model is validated with experimental data taken on a AlGaAs/GaAs HEMT in the series switch configuration.

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