Abstracts

Modeling the bias and temperature dependence of a C-class MESFET amplifier

S. Munoz, J.L. Sebastian and J.D. Gallego. "Modeling the bias and temperature dependence of a C-class MESFET amplifier." 1997 Transactions on Microwave Theory and Techniques 45.4 (Apr. 1997 [T-MTT]): 527-533.

In this paper, a complete bias and temperature-dependent large-signal model for a MESFET is determined from experimental S-parameters and dc measurements. This model is used in the analysis of the performance of a C-class amplifier at 4 GHz over a -50/spl deg/ to 100/spl deg/C temperature range and for different bias conditions. The dependencies of the elements of the equivalent circuit, as well as the amplifier gain on the temperature and the operating point, are evaluated. The gain optimization and the analysis as a function of temperature of the MESFET amplifier are done by using the describing function technique. Optimum bias device conditions in the C-class are obtained for maximum gain and also the flattest gain versus input power rate. A comparison between theoretical and measured results over temperature and bias ranges is shown. Experimental results show an excellent agreement with the theoretical analysis.

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