Abstracts

Nonlinear time-domain analysis of injection-locked microwave MESFET oscillators

J. Dixon, E. Bradley and Z.B. Popovic. "Nonlinear time-domain analysis of injection-locked microwave MESFET oscillators." 1997 Transactions on Microwave Theory and Techniques 45.7 (Jul. 1997 [T-MTT]): 1050-1057.

In this paper, injection-locked MESFET oscillators are analyzed using several numerical models. The injection-locking behavior of the van der Pol equation and of a more complex representation using the Curtice-Cubic MESFET model are investigated. Analysis and experimental results are compared for an NE71083 transistor oscillator operating at 0.5 GHz. The deficiencies of using a van der Pol oscillator model are pointed out. Time-domain results from the complex model exhibiting multicycle and apparently chaotic behaviors are also examined, and point to problems with common nonlinear simulation techniques for these circuits.

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