Abstracts

Stability Analysis for Large Signal Design of a Microwave Frequency Doubler

S. Basu, S.A. Maas and T. Itoh. "Stability Analysis for Large Signal Design of a Microwave Frequency Doubler." 1995 Transactions on Microwave Theory and Techniques 43.12 (Dec. 1995, Part II [T-MTT] (1995 Symposium Issue)): 2889-2897.

Microwave circuits such as frequency doublers are notorious for instabilities under parametric variation. The instabilities manifested in the doubler are due to the minority carrier lifetime of the pn junction diode. They are calculated using a simpler stability formulation. A global stability chart is computed using a novel techuique called the piecewise stability analysis (PSA) method and found to be in close agreement with the experimental values. These instabilities are characterized by secondary Hopf bifurcations and their eventual breakdown to chaos has been observed. The onset of Hopf bifurcation has been verified both experimentally and numerically.

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