Abstracts

Large Signal Analysis of a Parametric Harmonic Generator

K.M. Johnson. "Large Signal Analysis of a Parametric Harmonic Generator." 1960 Transactions on Microwave Theory and Techniques 8.5 (Sep. 1960 [T-MTT]): 525-532.

Large signal analysis of a harmonic generator using a semiconductor diode reveals a larger possible efficiency than a similar small signal analysis. As higher harmonic numbers are reached, large signal analysis becomes increasingly more important in predicting the maximum conversion efficiency. It is shown that there exists an optimum value for the diode bias voltage and an optimum coupling of the load and generator to the diode, and that the diode operating voltage should almost drive the diode into conduction. An expression is derived for the maximum conversion efficiency for any harmonic, and it is shown that the conversion loss increases with increasing harmonic number, approximately 2.9 db per n for large harmonic numbers in a typical case.

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