# Abstracts

## Circuit Conditions to Prevent Second-Subharmonic Power Extraction in Periodically Driven IMPATT Diode Networks

*D.F. Peterson. "Circuit Conditions to Prevent Second-Subharmonic Power Extraction in Periodically Driven IMPATT Diode Networks." 1974 Transactions on Microwave Theory and Techniques 22.8 (Aug. 1974 [T-MTT]): 784-790.*

The small-signal characteristics at the second subharmonic (half-frequency) of a periodically pumped IMPATT diode are presented. Theoretical analysis using an appropriate model indicates these characteristics can be interpreted as a "phase-sensitive admittance" which clarifies subharmonic oscillation conditions and suggests a method for their measurement. Measured data on silicon and GaAs diodes de-embedded to the active wafer are in good agreement with theoretical predictions based on the equivalent nonlinear model for each device. Circuit conditions that eliminate second subharmonic and thus prevent fundamental power robbing are given which can be readily obtained for existing devices. An example demonstrating the efficiency-limiting properties of subharmonic is given.

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