

## Analysis and Use of Harkless Diode Mount for IMPATT Oscillators

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*P.J. Allen, B.D. Bates and P.J. Khan. "Analysis and Use of Harkless Diode Mount for IMPATT Oscillators." 1982 MTT-S International Microwave Symposium Digest 82.1 (1982 [MWSYM]): 138-141.*

An equivalent circuit is derived for the Harkless diode mount used in IMPATT oscillators and the Kurokawa waveguide combiner. Comparison with experimental measurements of the authors and other workers shows that this equivalent circuit is accurate for a wide range of conditions, including multimode waveguide propagation and the diode off-center in the guide. This equivalent circuit is directly applicable to IMPATT combiner studies and is used in a recently-developed oscillator analysis technique to accurately predict oscillator frequency and power output and to examine second-harmonic tuning in the Harkless oscillator circuit. The results are supported by experimental evidence.

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