Abstracts

A Solid-State Microwave Source from Reactance-Diode Harmonic Generators

T.M. Hyltin and K.L. Kotzebue. "A Solid-State Microwave Source from Reactance-Diode Harmonic Generators." 1961 Transactions on Microwave Theory and Techniques 9.1 (Jan. 1961 [T-MTT]): 73-78.

The generation of harmonics with reasonable efficiencies has been made possible by the application of high Q nonlinear reactance diodes. An approximate solution for the conversion loss of harmonic generators utilizing these devices has been obtained and design curves relating conversion loss with harmonic number, diode Q, and voltage-capacitance coefficient are presented. Harmonic generators have been operated with silicon and gallium-arsenide mesa diodes in the UHF region and conversion losses approaching the theoretical value have been obtained. Three harmonic generation stages in miniature modular packages were cascaded to obtained 7-mw output at S band. These stages were driven by a transistorized crystal-controlled oscillator and power amplifier which supplied 200 mw at 140 Mc from 1.3-w dc.

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