Abstracts

Optimization of a 250-GHz Schottky tripler using novel fabrication and design techniques

J. Thornton, C.M. Mann and P. de Maagt. "Optimization of a 250-GHz Schottky tripler using novel fabrication and design techniques." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1055-1061.

A technique for optimizing a diode waveguide mount for millimeter- and submillimeter-wave applications has been developed. The structure consists of a planar rectangular radiator for which an accurate derivation of impedance is available. The planar radiating probe incorporates the diode contacting tip, is fabricated integrally with the microstrip filter, and is used in a 230-290-GHz frequency tripler. Modification of the tripler using the described technique resulted in an improvement of /spl ap/6 dB in available output power, compared to the authors' previous results for this device. Device output power exceeds 8.5 mW at 245 GHz for an input power of 132 mW. The best flange-to-flange efficiency (in excess of 11%) was achieved at 3.3-mW output power. This technique was then applied to a waveguide mount, incorporating two diodes contacted in parallel, so that greater input power could be handled. This resulted in a tripler with a maximum output power of 15 mW at 270 GHz for an input of 280 mW.

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