Abstracts

Multi-Watt Power Generation at Millimeter-Wave Frequencies Using Epitaxially-Stacked Varactor Diodes

P.W. Staecker, M.E. Hines, F. Occhiuti and J.F. Cushman. "Multi-Watt Power Generation at Millimeter-Wave Frequencies Using Epitaxially-Stacked Varactor Diodes." 1987 MTT-S International Microwave Symposium Digest 87.2 (1987 Vol. II [MWSYM]): 917-920.

High power varactor diodes capable of generating watts of power at frequencies as high as 100 GHz are described. These devices show cutoff frequencies in excess of 900 GHz and breakdown voltages greater than 100V. Output powers (and associated efficiencies) of frequency doublers built with these devices are 9W at 22 GHz (60%), 5.5W at 35 GHz (60%), 5W at 44 GHz (50%) and 280 mW at 88 GHz (14%). The last result is nearly 10 dB better than any previously reported multiplier power in that frequency range, but is preliminary in the sense that it is new data with an as yet non-optimal circuit. Thermal response simulations reported here show low operating junction temperatures for these devices.

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