Abstracts

Integrated TRAPATT Diode Arrays (Short Papers)

A. Rosen, H. Kawamoto, J. Klatskin and E.L. Allen, Jr.. "Integrated TRAPATT Diode Arrays (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.10 (Oct. 1975 [T-MTT]): 841-843.

This short paper is a description of the technique used to monolithically interconnect TRAPATT diodes in an array--resulting in a diode having low inductance interconnection and integrated heat capacitance which is necessary for long pulsewidths. For given power dissipation density and pulse length, the transient temperature rise in the diode decreases with the diameter. The reduction in diode diameter, however, leads to reduced power output. To take advantage of the reduction in temperature rise of small-size diodes while maintaining a large power output, a multiple-diode structure, monolithically interconnected, was fabricated. Pulsewidth operation of 50 µs has been achieved at a dissipation power density as high as 200 kW/cm², whereas the dissipation density must be reduced to 100 kW/cm² for the same total-area single-disk diode to operate reliably at 50 µs.

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