Abstracts

Multichip IMPATT Power Combining, a Summary with New Analytical and Experimental Results (Dec. 1979 [T-MTT])

C.T. Rucker, J.W. Amoss, G.N. Hill and N.W. Cox. "Multichip IMPATT Power Combining, a Summary with New Analytical and Experimental Results (Dec. 1979 [T-MTT])." 1979 Transactions on Microwave Theory and Techniques 27.12 (Dec. 1979 [T-MTT] (1979 Symposium Issue)): 951-957.

X band IMPATT diode chips have been efficiently combined in parallel, in series on diamond heat sinks, and in series-parallel on diamond heat sinks. This paper summarizes experimental and analytical work performed over a four-year period and places some of the results in perspective with respect to practical applications. Several device types have shown to be compatible with series geometries. Analysis has shown that some device types, when connected in series, form a combination which is neither open-circuit nor short-circuit stable, an intrinsically unstable condition. It has been shown further that capacitors of practical size can be placed in parallel with each chip of such an assembly to prevent the occurrence of the unstable condition. Thus unique problems reported earlier with some types of IMPATT's are understood and can be prevented. These experimental and analytical results appear to eliminate any hypothetical barrier to the routine series power combining of at least several types of IMPATT device chips.

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