Abstracts

Radial-Symmetric N-Way TEM-Line IMPATT Diode Power Combining Arrays

D.F. Peterson. "Radial-Symmetric N-Way TEM-Line IMPATT Diode Power Combining Arrays." 1982 Transactions on Microwave Theory and Techniques 30.2 (Feb. 1982 [T-MTT]): 163-173.

Circuit design and stability criteria are developed for a new class of IMPATT diode power combiners. These combiners make use of radial-symmetric circuits and provide an optimal integration of device and circuit properties to perform the power adding function. Both lossless N-way combiners and resistively stabilized N-way combiners are considered. Theoretical examples of this combining technique are given at X-band frequencies which make use of realistic experimentally determined IMPATT diode properties. Predictions for a 30-W ten-diode lossless X-band combiner indicate a l-dB locking bandwidth of 300 MHz and 10-dB gain. A 100-W resistively stabilized 10-GHz ten-diode combiner predicts a 150-MHz locking bandwidth, also at 10-dB locking gain.

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