Abstracts

Multiterminal Distributed Resistors as Microwave Attenuators

This paper presents an approach to the design of multiterminal planar resistors of arbitrary shape, utilzed as microwave attenuators. It indicates how to convert the results of two-dimensional field computations into the nodal description of the circuit, required by commercially available microwave CAD packages. The paper introduces the concept of self-dual geometry, which, in conjunction with symmetry, defines a class of distributed attenuators lending themselves to substantial simplifications in design. A general property of resistive networks is demonstrated, based on which the effects of incremental changes in the multiterminal resistor shape (including trimming) can be intuitively assessed. Some of the proposed ideas are exemplified by the design and test of an extremely compact multiple value attenuation pad, providing (by minimal adjustment) 1-dB steps between 0 and 5 dB.

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