Abstracts

The Planar Circuit--An Approach to Microwave Integrated Circuitry

T. Okoshi and T. Miyoshi. "The Planar Circuit--An Approach to Microwave Integrated Circuitry." 1972 Transactions on Microwave Theory and Techniques 20.4 (Apr. 1972 [T-MTT]): 245-252.

Three principal categories have been known in electrical circuitry so far. They are the lumped-constant (0-dimensional) circuit, distributed-constant (1-dimensional) circuit, and waveguide (3-dimensional) circuit. The planar circuit to be discussed in general in this paper is a circuit category that should be positioned as a 2-dimensional circuit. It is defined as an "electrical circuit having dimensions comparable to the wavelength in two directions, but much less thickness in one direction." The main subject of this paper is the computer analysis of an arbitrarily shaped, triplate planar circuit. It is shown that a computer analysis based upon a contour-integral solution of the wave equation offers an accurate and efficient tool in the design of the planar circuit. Results of some computer calculations are described. It is also shown that the circuit parameters can be derived directly from Green's function of the wave equation when the shape of the circuit is relatively simple. Examples of this sort of analysis are also shown for comparison with the computer analysis.

❑ Return to main document.