Abstracts

Characteristics of Transmission Lines with a Single Wire for a Multiwire Circuit Board

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This paper presents the characteristic impedance Z/sub 0/ and the phase velocity v/sub p/ of transmission lines with a single wire for a multiwire circuit board (MWB) under the quasi-TEM wave approximation. The characteristics are discussed for each of three investigated strictures a: (I)H = h + r, (II)H = h, and (III)H = h - r, where r, h, and H are the radius of the wire, the thickness of the dielectric (adhesive layer), and the distance from the ground plane to the center of the wire, respectively. A charge simulation method is used for the calculation of the parameters. Z/sub 0/ and v/sub p/ are presented in graphical form for adhesive relative dielectric constants epsilon* of 1.0, 2.65, and 5.0 as a function of r/h. An approximate formula of Z/sub 0/ for the structure of case (II) with epsilon* = 5.0 is also presented.

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