Abstracts

The Short Pulse Behavior of Lossy Tapered Transmission Lines

R. Stapelfeldt and F.J. Young. "The Short Pulse Behavior of Lossy Tapered Transmission Lines." 1961 Transactions on Microwave Theory and Techniques 9.4 (Jul. 1961 [T-MTT]): 290-296.

An analytic method is given which allows the design engineer to assess rapidly the short pulse characteristics of any given tapered-transmission-line type of pulse transformer. The method allows inclusion of both skin-effect losses and losses which are independent of frequency. The effects of mismatching at either end are shown to be as important as the taper function of the line itself. The results of this approximate method are expressed as simple integrals and matching terms to which it is easy to attach physical significance. The method is applied to the analysis of two tapered-line pulse transformers which are geometrically uniform coaxial structures with tapered dielectric constants. The line whose nominal characteristic impedance is an exponential function of electrical position is shown to have a good rise time and tilt distortion characteristics.

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