Abstracts

Analysis of Certain Transmission-Line Networks in the Time Domain

W.J. Getsinger. "Analysis of Certain Transmission-Line Networks in the Time Domain." 1960 Transactions on Microwave Theory and Techniques 8.3 (May 1960 [T-MTT]): 301-309.

Many linear components in nondispersive transmission line are made up solely of commensurate lengths of line of various characteristic impedances. Such components have impulse responses that are a series of equispaced impulses, and, as a result, their frequency responses can be written as a Fourier series. Given the period and coefficients of the Fourier series describing the frequency response, the time response of the circuit to any pulse can be written down immediately as a sum of replicas of the applied pulse, each replica having an amplitude given by the coefficient of a term in the series, and occurring at a time determined by the period of that term of the series. The pulse responses of stepped transmission-line transformers, backward-coupling hybrids, and branch-line hybrids are determined and, after assuming a simple applied-pulse shape, are plotted.

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