Tables of Maximally Flat Impedance-Transforming Networks of Low-Pass-Filter Form (Correspondence)

In previous papers, Szentirmai and Matthaei present design theory for synthesis of lumped-element Chebyshev impedance transforming networks. In the paper of Matthaei extensive tables of element values for the impedance-transforming networks are also presented. These networks are of low-pass ladder form consisting of series inductances and shunt capacitances. They give impedance match in the Chebyshev sense between resistor terminations of arbitrary ratio (designs with resistor termination ratios from 1.5 to 50 are tabulated). The responses of these networks have moderately high attenuation at dc (the amount of attenuation depends on the termination ratio); their attenuation falls to a very low level in the impedance-matching band, and then rises monotonically and steeply above the operating band in a manner typical of low-pass filters. The impedance-transforming networks can be realized in lumped-element form for low-frequency applications, and in semi-lumped-element form (using short sections of transmission line of alternating high and low impedances) at microwave frequencies.

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