Abstracts

Transmission Characteristics and a Design Method of Transmission-Line Low-Pass Filters with Multiple Pairs of Coincident Zeros and Multiple Pairs of Coincident Poles

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The transmission characteristics and a design method are presented for a transmission-line Iow-pass filter with multiple pairs of coincident zeros in the finite frequency of the passband and multiple pairs of coincident poles in the finite frequency of the stopband and for a transmision-line low-pass filter with Butterworth characteristic in the passband and multiple pairs of coincident poles in the finite frequeney of the stopband. The former transmission-line low-pass filter shows an improved skirt attenuation performance and delay characteristic than a Chebyshev transmission-line low-pass filter in the same network degree. The latter type of transmission-line low-pass filter shows an improved skirt attenuation performance in comparison to a Butterworth transmission-line low-pass filter in the same network degree, it is positioned about in the middle between a Butterworth type and a Chebyshev type, the delay characteristic is improved considerably in comparison to the Chebyshev type, and the characteristic is close to that of the Butterworth type. With this design method, the connecting unit elements in addition to the stubs contribute to the attenuation response. The design example is shown on the basis of a concrete specification, and it is shown that the obtained attenuation strictly fulfills the specification.

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