

## A $\lambda/2$ CPW resonator BPF with multiple attenuation poles and its miniaturization

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Very simple method for creating multiple attenuation poles of a bandpass filter (BPF) based on a  $\lambda/2$  coplanar waveguide (CPW) resonator with tap-coupling is proposed. Moreover, miniaturization of the CPW-BPF using a stepped impedance resonator (SIR) is also carried out. As a consequence, the bandpass characteristics with multiple attenuation poles are obtained together with the reduced filter size. The derivation of multiple attenuation poles and a method for reduced filter size are also detailed.

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