

60-GHz-band dielectric waveguide filters with cross-coupling for flip-chip modules

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Small-size planar dielectric waveguide filters are presented for 60-GHz-band flip-chip modules. The filters have cross-coupling to introduce an attenuation pole for higher stop-band rejection. We develop two types of three-resonator filters: one has a medium bandwidth and the other has a narrow bandwidth. The former filter shows 1.1-dB insertion loss at a center frequency of 58.3 GHz and 33-dB suppression at a 3-GHz-higher separation. The latter filter shows 3.1-dB insertion loss at a center frequency of 58.4 GHz and a 10-dB-bandwidth of 2.7 GHz. The size of each filter is 3.4 mm/spl times/3.5 mm.

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