Abstracts

Miniaturized Microwave Filter Construction with Dielectric-Loaded Resonator and Space Coupling

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A new filter construction is proposed in this paper to realize a highly miniaturized microwave band-pass filter. An element of resonator filter is composed of a square dielectric post and a round inner conductor. Each element of resonator is allocated in a housing similar to conventional combline filter, however, the length of a resonator is basically a quarter-wavelength long. The higher unloaded Q and a larger inter-resonator coupling were brought through two factors: open-boundary condition on the periphery along the dielectric post and the air spacing between resonators. Five-stages Tschebyshev response band-pass filters were developed at 800 MHz band to have 20~30 MHz pass-band and 0.8~1.0 dB insertion loss at the temperature range: -35~+80°C, The volume and the weight of the filters are about 25 cm^3 and 60 gramms.

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