Abstracts

Modeling of Thin Film Resonators and Filters

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Thin film piezoelectric resonators have been used in the synthesis of crystal filters at microwave frequencies and for oscillator control. These resonators may be modeled using equivalent circuits or analytical expressions derived from acoustic boundary value excitation problems. Results of the modeling are described in three forms; 1) impedance characteristics plotted versus frequency, 2) analytical expressions of impedance, and 3) lumped element equivalent circuits useful for filter design and analysis. Two filter types are modeled, a simple ladder filter and a more complex stacked crystal filter using acoustically coupled resonators.

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