Abstracts

Unified CAD-oriented circuit model of finite-ground coplanar waveguide gap structure for uniplanar M(H)MICs

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Unified CAD-oriented model is proposed and developed for accurate circuit representation of a variety of finite ground coplanar waveguide (FGCPW) gap structures. A so-called "short-open calibration" technique is applied in carrying out an effective numerical calibration to extract lumped-elements of the circuit model from the Y-parameters obtained from our deterministic full-wave method of moments (MoM). This joint field/circuit model consists of an equivalent series circuit topology of RLC resonance standing for a parasitic inductance caused by the finite ground width and a coupled gap capacitance, in addition to two shunt capacitors. Unbounded radiation is represented in the model and it is too strong to be ignored around the resonance, whereas the inductive effect is rapidly enhanced as frequency increases. Experiments are carried out that have verified our proposed model and the parasitic radiation effect.

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