

## Characterization and Optimization of S-Parameters of Microwave Circuits

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**Abstract :** An approach for modeling and numerical simulation of passive planar structures using the edge line concept is developed. With this method, we develop an efficient modeling technique for microstrip discontinuities. The technique obtains closed form expressions for the equivalent circuits which are used to model these discontinuities. Then, it would be easy to handle and to characterize complicated structures like T and Y junctions, truncated junctions, arbitrarily shaped junctions, cascading junctions and more generally planar multiport junctions. Another advantage of this method is that the edge line concept for arbitrary shape junctions operates with real parameters circuits. The validity of the method was further confirmed by comparing our results for various discontinuities (bend, filters) with those from HFSS as well as from other published sources.

**Keywords :** optimization, CAD analysis, microwave circuits, S-parameters

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