Abstracts

Measurement-based closed-form modeling of surface-mounted RF components

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An understanding of the parasitic and packaging effects of passive surface-mounted devices (SMDs), including characterization of the pertinent interconnects, is required for developing robust equivalent-circuit models that are useful in RF and microwave computer-aided design. In this paper, we develop a procedure for modeling SMD inductors and capacitors, which incorporates the nonideal behavior associated with frequency dispersion, board layout, component parasitics, and device packaging. The equivalent-circuit parameters are extracted in closed-form from accurate in-situ measurement of the component's S-parameters, without the necessity for cumbersome optimization procedures normally followed in RF equivalent-circuit synthesis.

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