Abstracts

Modeling of lead-frame plastic CSPs for accurate prediction of their low-pass filter effects on RFICs (Sep. 2001 [T-MTT])

Tzyy-Sheng Horng, Sung-Mao Wu, Hui-Hsiang Huang, Chi-Tsung Chiu and Chih-Pin Hung. "Modeling of lead-frame plastic CSPs for accurate prediction of their low-pass filter effects on RFICs (Sep. 2001 [T-MTT])." 2001 Transactions on Microwave Theory and Techniques 49.9 (Sep. 2001 [T-MTT] (Mini-Special Issue on the 2001 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 1538-1545.

This paper presents a direct extraction method to construct the electrical models of lead-frame plastic chip scale packages for RF integrated circuits (RFICs) from the measured S-parameters. To evaluate the package effects on the reciprocal passive components, the insertion and return losses for an on-chip 50-/spl Omega/ microstrip line housed in a 32-pin bump chip carrier (BCC) package were analyzed based on the established package model. Excellent agreement with measurement has been found up to 15 GHz. When applied to the nonreciprocal active components, the gain variations for a heterojunction-bipolar-transistor array housed in an 8-pin BCC package have also been successfully predicted up to 22 GHz. Both cases have demonstrated that the package acts as a low-pass filter to cause a sharp cutoff for the RFIC components above a certain frequency.

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