Abstracts

A novel approach to 3-D modeling of packaged RF power transistors

T. Johansson and T. Arnborg. "A novel approach to 3-D modeling of packaged RF power transistors." 1999 Transactions on Microwave Theory and Techniques 47.6 (Jun. 1999, Part I [T-MTT]): 760-768.

Packaged radio frequency (RF) power transistors with internal matching networks for use at 1.8-2 GHz in cellular base stations have been modeled using three-dimensional (3-D) electromagnetic-field simulators and SPICE. A method for extracting the actual internal 3-D geometries applying scanning electron microscope micrographs and software running in Java was developed. The results show good correlation between measured and simulated data in the 0.1-6 GHz interval studied. The importance of the mutual coupling and capacitance contributions from the package was demonstrated for different frequency domains. The described approach provides an interesting and promising method for modeling the interior parts of RF power transistors or other complex package structures, where geometry and coupling play a far greater role than for integrated-circuit packages.

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