Abstracts

Rigorous modeling of packaged Schottky diodes by the nonlinear lumped network (NL/sup 2/N)-FDTD approach

C. Emili, F. Alimenti, P. Mezranotte, L. Roselli and R. Sorrentino. "Rigorous modeling of packaged Schottky diodes by the nonlinear lumped network (NL/sup 2/N)-FDTD approach." 2000 Transactions on Microwave Theory and Techniques 48.12 (Dec. 2000 [T-MTT] (Special Issue on 2000 International Microwave Symposium)): 2277-2282.

Recently, a novel method has been proposed that allows general linear lumped networks to be incorporated within finite-difference time-domain (FDTD) simulators. In this paper, this method is extended in such a way as to represent two-terminal nonlinear lumped networks in a single FDTD grid cell. In particular, the extended method is applied to the rigorous modeling of packaged Schottky diodes. The implementation is first validated in the case of a diode connected to a voltage source. The SPICE simulator has been used to provide reference results. The same structure has also been used to establish the accuracy of the method, It has been demonstrated that such accuracy is significantly increased with respect to that of the conventional lumped-element-FDTD approach, Finally, the technique has been validated against measured results, showing a good agreement.

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