Abstracts

FET Model Parameter Extraction Based on Optimization with Multiplane Data-Fitting and Bidirectional Search--A New Concept

F. Lin and G. Kompa. "FET Model Parameter Extraction Based on Optimization with Multiplane Data-Fitting and Bidirectional Search--A New Concept." 1994 Transactions on Microwave Theory and Techniques 42.7 (Jul. 1994, Part I [T-MTT]): 1114-1121.

A new optimization formulation is presented for efficient FET model parameter extraction, in which data-fitting is carried out in multi reference planes instead of only one, and the objective function is minimized by a bidirectional search technique. As an example of application, all parameters of a commonly used 15-element small-signal FET equivalent circuit model are clearly identified from only one set of measured S-parameters. A self-consistent generation of starting values can be involved regarding the FET in the passive pinch-off operating mode. Moreover, applying multi-bias data-fitting, which is performed without increasing the number of ordinary optimization variables, yields a robust determination of both the overall bias-independent parasitic and the bias-dependent intrinsic elements. For demonstration results are presented for a 0.5-µm MESFET.

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