Abstracts

Direct extraction and modeling method for temperature dependent large signal CAD model of Si-BJT

Y. Suh, D. Heo, A. Raghavan, E. Gebara, S. Nuttnick, K. Lim and J. Laskar. "Direct extraction and modeling method for temperature dependent large signal CAD model of Si-BJT." 2001 MTT-S International Microwave Symposium Digest 01.2 (2001 Vol. II [MWSYM]): 971-974 vol.2.

A new Si-BJT CAD model and the corresponding direct extraction method are presented. An exact analytical expression for the total distributed base resistance is developed. Several exact analytical solutions for the thermal resistance and the current source models are derived. The model based on the new analytical expressions can predict the measured data minimizing the least square errors between measured and modeled data. This current source modeling method requires no optimization or trimming process. The parameters are extracted self consistently to minimize the error in modeling. We applied this method to a 5 finger 0.4/spl times/20 /spl mu/m/sup 2/ Si-BJT and verified the model over the temperature range 273-333/spl deg/K and up to 15 GHz. The model shows good correlation with the measured data.

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