Abstracts

Extraction of a polynomial LDMOS model for distortion simulations using small-signal S-parameter measurements

J. Vuolevi, J. Aikio and T. Rahkonen. "Extraction of a polynomial LDMOS model for distortion simulations using small-signal S-parameter measurements." 2002 MTT-S International Microwave Symposium Digest 02.3 (2002 Vol. III [MWSYM]): 2157-2160 vol.3.

A method based on measured S-parameters for extracting a polynomial electro-thermal model of a 30W RF power transistor is presented. Once the package is de-embedded, the model for the intrinsic transistor can be calculated and distortion can be simulated. Simulated results match well with the measured values, revealing both thermal and electrical bandwidth dependencies of 3rd order intermodulation distortion (IM3). Component-wise Volterra analysis also shows that IM3 distortion is dominated by the nonlinearities of the input capacitance and gm in LDMOS type of transistors.

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