Abstracts

Low-noise FET's vulnerability prediction under RF pulsed overloads based on nonlinear electrothermal modeling

A. Roizes, D. Lazaro, R. Quere and J.P. Teyssier. "Low-noise FET's vulnerability prediction under RF pulsed overloads based on nonlinear electrothermal modeling." 1999 Microwave and Guided Wave Letters 9.7 (Jul. 1999 [MGWL]): 280-281.

In this work we have determined a nonlinear electrothermal model for a low-noise GaAs MESFET, which enables evaluation of the time dependance of the internal temperature rise consecutive to a microwave overload impinging on the gate. This model takes into account the balance between the microwave energy loss under the gate in the active layer and energy conduction through the substrate during the pulse duration. We have conducted experimental determination of the critical peak power level for failure for several pulse durations and with the application of the model, we find that burnout is reached when the internal temperature exceeds 500/spl deg/C. We are able to predict the vulnerability of a low-noise amplifier under microwave overload.

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