Abstracts

Electrothermal modeling and measurement for spatial power combining at millimeter wavelengths

W. Batty, A.J. Panks, R.G. Johnson and C.M. Snowden. "Electrothermal modeling and measurement for spatial power combining at millimeter wavelengths." 1999 Transactions on Microwave Theory and Techniques 47.12 (Dec. 1999 [T-MTT] (Special Issue on 1999 International Microwave Symposium)): 2574-2585.

In this paper, the first completely physical coupled electrothermal model, suitable for large-signal simulation of MESFET- and HEMT-based MMIC's and MMIC arrays, on a timescale suitable for computer-aided design, is presented. The model is validated experimentally by high-resolution thermal imaging of a MMIC 38-GHz three-stage balanced amplifier, mounted on a Cu/FR-4 substrate and cooled entirely by natural convection and radiation into free space.

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