Abstracts

Substrate Parasitic and Dual-Resistivity Substrates (Short Papers)

R. Lowther, P.A. Begley, G. Bajor, A. Rivoli and W.R. Eisenstadt. "Substrate Parasitic and Dual-Resistivity Substrates (Short Papers)." 1996 Transactions on Microwave Theory and Techniques 44.7 (Jul. 1996, Part I [T-MTT]): 1170-1174.

In high-frequency semiconductor applications, substrate effects can be a dominant source of parasitic unless they are carefully minimized. Here a dual-resistivity substrate in a bonded-oxide process is considered for the optimization of the two major types of substrate parasitic: resistive substrate losses and capacitive coupling (crosstalk) through the substrate. These will both depend on the frequency, the two substrate resistivities, and the thickness of the two substrate layers. The thickness of the upper layer is treated as a fully designable parameter. The mechanisms will be evaluated numerically, but intuitive rule-of-thumb arguments will also be provided for a good understanding of the physics and of the tradeoffs in selecting an optimal design. The results of these sections may also serve as a guide for determining standard substrate resistivities.

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