Abstracts

Substrate loss mechanisms for microstrip and CPW transmission lines on lossy silicon wafers

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Loss mechanisms for microstrip and coplanar transmission lines on lossy silicon substrates are analyzed. It is shown that the losses are bias-dependent. This is supported both by experimental results and numerical simulations. We attribute this effect to changes in the carrier static distribution underneath the oxide. A continuous analysis of the losses is performed from accumulation to strong inversion. It demonstrates that neglecting the variations of RF losses versus DC bias conditions can lead to important inaccuracies on the extracted values of circuit and device physical parameters.

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