Modeling and Characterization of Slow-Wave Microstrip Lines on Metallic-Nanowire-Filled-Membrane Substrate

Resumo

In this paper, a physical model of the slow-wave (SW) microstrip lines based on a metallic-nanowire-filled-membrane substrate is presented for the first time. The model properly predicts the behavior of the SW transmission lines as shown by the experimental results. Two sets of transmission lines differing in oxide thickness with various widths were fabricated and characterized up to 70 GHz. The electrical model is valid for both oxide thicknesses and microstrips width. High-quality factors are obtained, above 40 from 30 GHz up to 70 GHz, paving the way for further designs of passive circuits, like power dividers or hybrid couplers, with good performance. (AU)