Abstracts

A New Constant-Resistance ASK Modulator Using Double-Sided MIC

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A new constant-resistance ASK modulator using double-sided MIC techniques is proposed. (The term "double-sided MIC" refers to a circuit that utilizes both substrate surfaces.) The circuit consists of two quarter-wavelength slotlines, two variable-resistance elements, and a slot-to-microstrip transition. A balanced circuit configuration is used to obtain a high ON/OFF ratio at high frequencies. The modulator does not require circulators or hybrid couplers for perfect matching. The conditions required for impedance matching are also calculated. The experimental results are obtained in the frequency range from 25.0 to 29.5 GHz. The minimum insertion loss obtained is 2.8 dB, and the ON/OFF ratio is greater than 40 dB. The return loss is kept above 12 dB in the frequency range. This new modulator should prove useful for various applications such as variable equalizers and variable attenuators.

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