Abstracts

Optically Controlled Coplanar Waveguide Phase Shifters

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This paper reviews the progress and ongoing development of optically controlled phase shifters, primarily those based on the use of coplanar waveguide (CPW) printed on semiconductor substrates. We first qualitatively describe slow-wave phenomena in such guides, their possible use to produce variable phase shifts, and several different approaches using these phenomena to implement phase shifters. Two main techniques, one based on the use of Schottky-contacted CPW electrodes and the other on optically generated carriers, are discussed, together with the experimental performance of prototype devices using these control mechanisms. Finally, we discuss a newer technique, based on the combined use of Schottky contacts and optical illumination. Preliminary results on such a device indicate that this technique is a promising alternative to a purely Schottky contact or purely optical control while preserving advantages of both techniques.

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