Abstracts

Theory of an Efficient Electronic Phase Shifter Employing a Multilayer Dielectric-Waveguide Structure

A.B. Buckman. "Theory of an Efficient Electronic Phase Shifter Employing a Multilayer Dielectric-Waveguide Structure." 1977 Transactions on Microwave Theory and Techniques 25.6 (Jun. 1977 [T-MTT] (Special Issue on the Proceedings of the Second International Conference on Submillimeter Waves and Their Applications)): 480-483.

Multilayer dielectric-waveguide theory is applied to the design of a submillimeter phase shifter driven by a p-i-n diode. In a three-layer structure, proper choice of layer thicknesses can yield a predicted phase shift/unit length about ten times that possible from a single slab at the same frequency. In a properly specified four-layer structure, still larger shifts, limited primarily by the required excursion in effective refractive index, are shown to be possible. A further advantage of the four-layer structure is that it can be designed to have a very thin active region, thus lowering diode power/unit phase shift, which is proportional to the cross section of the intrinsic region of the p-i-n diode.

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