Abstracts

Phase and Amplitude Characteristics of InP: Fe Modified Interdigitated Gap Photoconductive Microwave Switches

I.L. Andersson and S.T. Eng. "Phase and Amplitude Characteristics of InP: Fe Modified Interdigitated Gap Photoconductive Microwave Switches." 1989 Transactions on Microwave Theory and Techniques 37.4 (Apr. 1989 [T-MTT]): 729-733.

The transmission amplitude and phase characteristics of InP:Fe modified interdigitated gap (MIG) photoconductive microwave switches are reported. Measurements in the 0.1-1 GHz frequency range show that the phase is shifted ~90° and that the corresponding change in amplitude ranges from 43 dB at 0.1 GHz to 23 dB at 1 GHz when the illumination-induced conductance is switched from a low OFF-state value (~4.10 -/sup 8/ S) to a high ON-state value (5 mS). The observed characteristics can be described by a phase-shifting region and an amplitude modulation region. In the phase-shifting region the phase strongly depends on the conductance, and the amplitude is almost constant. In the amplitude modulation region both the amplitude and the phase depend on the conductance but the effect on the amplitude is much more pronounced. A lumped-element model describing the device performance is presented. It is concluded that these optoelectronic microwave switching devices are suitable for high-speed amplitude modulation but are not too promising as high-speed phase shifters.

❑ Return to main document.