Abstracts

Characteristics of Microwave Acoustic Transducers for Volume Wave Excitation

T.M. Reeder and D.K. Winslow. "Characteristics of Microwave Acoustic Transducers for Volume Wave Excitation." 1969 Transactions on Microwave Theory and Techniques 17.11 (Nov. 1969 [T-MTT] (Special Issue on Microwave Acoustics)): 927-941.

Transducers which utilize acoustoelectric conversion in a piezoelectric film, plate, or surface have found wide application for generating planar volume-acoustic waves at microwave frequencies. A review is given of the electrical impedance, conversion loss, and bandwidth characteristics for piezoelectric film or plate transducers which vibrate in one-dimensional thickness extensional or shear modes. The transducer response is related to the electric and acoustic parameters that describe the transducer configuration, and experimental examples are given to illustrate the operation of typical transducer configurations. Methods for achieving low conversion loss and/or broad bandwidth are discussed and experimental examples given. Tables of bulk material constants are supplied for commonly used plate and film devices, and transducer fabrication methods are reviewed. Other types of volume wave transducers, such as those utilizing a single piezoelectric surface, a diffusion layer in a piezoelectric semiconductor, or mode conversion at a boundary are also briefly discussed.

❑ Return to main document.