Abstracts

Signal Processing by Electron-Beam Interaction with Piezoelectric Surface Waves

A.G. Bert, B. Epsztein and G. Kantorowicz. "Signal Processing by Electron-Beam Interaction with Piezoelectric Surface Waves." 1973 Transactions on Microwave Theory and Techniques 21.4 (Apr. 1973 [T-MTT] (Special Issue on Microwave Acoustic Signal Processing)): 255-263.

A new type of device is described in which an acoustoelectric surface wave interacts with low energy free charges created on the surface of a piezoelectric material. The experimental results obtained show that one of the most promising applications is an analog RF storage device for which several minutes of storage time have been achieved at 30 MHz on quartz with an internal insertion loss of 63 dB. If the width of the current pulse is large enough, direct attenuation of the surface wave may be measured due to the energy absorbed by the motion of secondary electrons. Experimental and theoretical results are presented. The limitations and the applications of the device to signal processing are discussed.

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