

Fabrication of high-frequency pMUT arrays on silicon substrates

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ABSTRACT

A novel technique based on silicon micromachining for fabrication of linear arrays of high-frequency piezoelectric micromachined ultrasound transducers (pMUT) is presented. Piezoelectric elements are formed by deposition of lead zirconia titanate into etched features of a silicon substrate such that the depth of these features determine the element thickness and hence the resonance frequency. The process leaves a near planar surface which is ideal for further wafer level processing such as top electrode and interconnect formation. A fabricated element is characterized by pulse echo response.