

## Piezoelectric Transducers in the Schemes of Bandpass and Bandstop Electrical Filters

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Piezoelectric transducers are widely used in electroacoustics, hydroacoustics, measuring technology, nondestructive control, piezomotors, scanners of nanomicroscopes, other fields of science and techniques.

Piezoelectric elements in the form of piezoresonators or piezoelectric transformers are often used for the manufacture of piezoelectric transducers [1].

To increase the operating range the transducers may be included into the schemes of electrical filters. The disadvantage of these transducers is the need to use two piezoelectric elements or the piezoelectric element and the capacitor. To eliminate this drawback in the schemes of the transducers can be used piezoelectric transformers.

Piezoelectric element with three or more electrodes can be conditionally called as piezoelectric transformer.

The designs of transducers with piezoelectric transformers in the schemes of bandpass and bandstop filters are shown in Fig. 1.

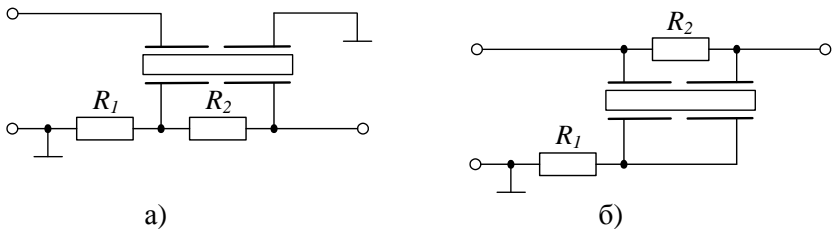


Fig. 1 – Designs of bandpass (a) and bandstop (b) filters with piezoelectric transformer

The advantage of the proposed structures is the filters realization in the body of one piezoelectric element.

1. V. Sharapov, *Piezoceramic sensors*. (Springer Verlag: 2011).