EPCOS

Electronic Parts and Components

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Multilayer piezo components
Piezo resonator enables smallest linear motor worldwide

EPCOS, world market leader in piezo actuators for fuel injection systems, has developed a series of innovative miniaturized multilayer piezo components. In addition to the ultra-flat piezo transformers already on the market, EPCOS now also offers piezo benders and resonators. The latter has allowed US company New Scale Technologies to develop the world's smallest linear motor that is powered directly by a battery voltage of 2.8 V. With a length of 6 mm, its height and width are just 1.55 mm².

The motor consists of a threaded pin running inside a threaded nut. Activating the ultrasonic resonator causes the nut to oscillate torsionally and drive the threaded pin forward and back. This simple and rugged construction allows forward speeds of up to 10 mm/s with a resolution as fine as 0.5 µm to be attained. The operating frequency of the piezo resonators is in the ultrasound range of 150 kHz.

Previous piezo-based linear motors require an operating voltage of about 30 V. By contrast, the new piezo resonators from EPCOS require just 2.8 V. In combination with its compact dimensions, it is suitable for use in battery-powered devices. One possible application is an optical zoom plus autofocus for camera systems in mobile phones.

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