

Transversal Mode Piezoelectric Actuator

ABSTRACT

A transversal mode monolithic multilayer piezoelectric actuator (TM-MMPA) (30) and method for making the same are disclosed. The thickness of all of the piezoelectric layers (32) are the same, and metal electrodes (44a,44b) are
5 prepared on the upper and lower surfaces (40a,40b) of the actuator (30). Elastic insulation layers (48) are formed to cover the metal electrodes (44a,44b). All piezoelectric layers between the electrodes (34,44a,44b) become piezoelectric responsive after poling, thus, no hindrance occurs to transversal displacement, whereas a large force to hinder the transversal movement is present in existing
10 longitudinal mode actuators due to the non-piezoelectric responsive top and bottom layers. The present TM-MMPA is suitable for practical use where a single transversal mode piezoelectric bar is generally used, and can also be used where low driving voltages are required, where the single bar piezoelectric actuator can not.

(Fig. 2)