

Title (en)

MICRO-ELECTROMECHANICAL SWITCH HAVING A DEFORMABLE ELASTOMERIC CONDUCTIVE ELEMENT

Title (de)

MIKROELEKTROMECHANISCHER SCHALTER MIT EINEM DEFORMIERBAREN ELASTOMERISCHEN LEITFÜHIGEN ELEMENT

Title (fr)

COMMUTATEUR MICROELECTROMECHANIQUE AYANT UN ELEMENT CONDUCTEUR ELASTOMERE DEFORMABLE

Publication

EP 1535296 A1 20050601 (EN)

Application

EP 02746591 A 20020614

Priority

US 0219449 W 20020614

Abstract (en)

[origin: WO03107372A1] A micro-electromechanical switch (MEMS) having a deformable elastomeric element (1) which exhibits a large change in conductivity with a small amount of displacement. The deformable elastomeric element (1) is displaced by an electrostatic force that is applied laterally resulting in a small transverse displacement. The transversal displacement, in turn, pushes a metallic contact (7) against two conductive paths (5, 6), allowing passage of electrical signals. The elastomer (1) is provided on two opposing sides with embedded metallic elements (9, 10), such as impregnated metallic rods, metallic sheets, metallic particles, or conductive paste. Actuation electrodes (18, 8) are placed parallel to the conductive sides of the elastomer. A voltage applied between the conductive side of the elastomer and the respective actuation electrodes (18, 8) generate the electrostatic attractive force that compresses the elastomer (1), creating the transverse displacement that closes the MEMS. The elastomeric based MEMS extends the lifetime of the switch by extending fatigue life of the deformable switch elements.

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