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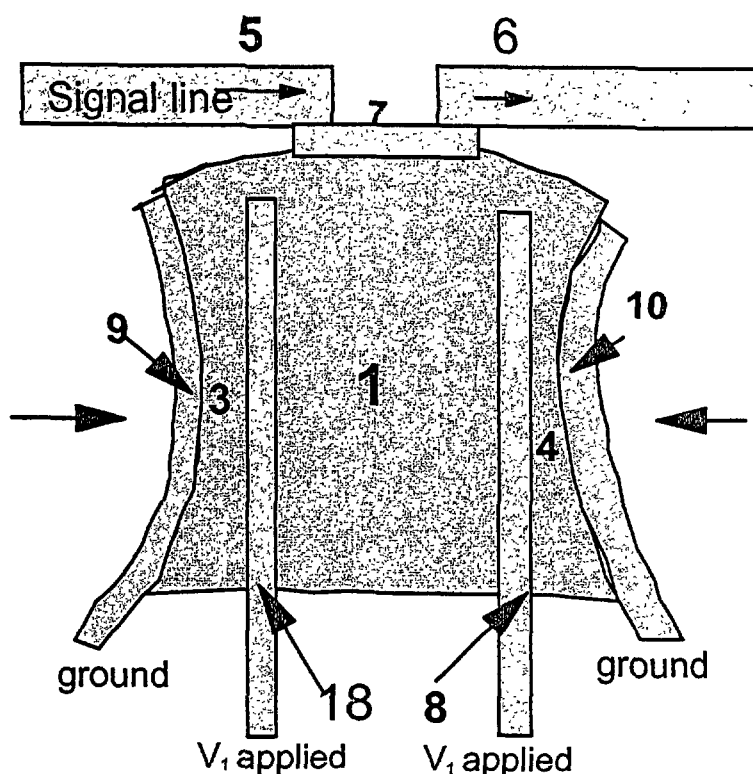
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(54) Title: MICRO-ELECTROMECHANICAL SWITCH HAVING A DEFORMABLE ELASTOMERIC CONDUCTIVE ELEMENT



(57) Abstract: 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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