Magnetically Actuated Micro-Electro-Mechanical Capacitor Switches In Laminate

Tech ID: 22234 / UC Case 2011-216-0

BRIEF DESCRIPTION

This present invention describes the design of a miniature capacitive switch with a footprint less than 10 mm2 that can handle up to 100 W of radio frequency (RF) power. This invention also relates to methods of manufacturing these capacitive switch devices directly within or on any of the following: lead frames, substrates, microelectronic packages, printed circuit boards, flex circuits, and rigid-flex materials.

SUGGESTED USES

This invention has utility in the area of radio frequency communication technologies such as phase shifters, diversity antennas, resonators, line switches, attenuators, isolators, and tuning circuits.

ADVANTAGES

The invention uses printed circuit boards and laminates to build MEMS RF switch devices, which is ideally suited to the needs of high-power RF switches, since it allows the creation of rugged, highly conductive devices, and allows relatively easy integration of alternative technologies such as magnetic components for electro-magnetic actuation. These small sized devices employ an actuation component, such as electromechanical or bimorph thermal, that directs RF current through an on-board capacitor in the “on” state, or provides an open circuit in the “off” state. Ideally, they should require low voltage to actuate, and require zero power to maintain either the “on” or “off” state (latching).

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,810,341	08/19/2014	2011-216

STATE OF DEVELOPMENT

Prototypes have been assembled and successfully tested.

CONTACT

Alvin Viray
aviray@uci.edu
tel: 949-824-3104.



INVENTORS

» Bachman, Mark G.

OTHER INFORMATION

KEYWORDS

Capacity switch, Radio frequency power, Printed circuit boards, Lead frames, MEMS, Laminates

CATEGORIZED AS

» **Communications**
  » Wireless
» **Semiconductors**
  » Assembly and Packaging
  » Design and Fabrication

RELATED CASES

2011-216-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Micro-electromagnetically Actuated Latched Switches
- Manumeter for Monitoring and Assessing Upper Extremity Rehabilitation
- Magnetic Recovery Method Of Magnetically Responsive High-Aspect Ratio Photoresist Microstructures
- Use Of Micro-Structured Plate For Controlling Capacitance Of Mechanical Capacitor Switches
- Hearing device that amplifies sound using a tympanostomy tube

UCI Beall
Applied Innovation

5270 California Avenue / Irvine,CA
92697-7700 / Tel: 949.824.2683

© 2012 - 2014, The Regents of the University of California
Terms of use
Privacy Notice