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Yang et al.

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(54) **OPTICAL SWITCH AND OPTICAL SWITCH DEVICE HAVING THE SAME**

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See application file for complete search history.

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(57) **ABSTRACT**

Provided is an optical switch member including a bi-stable mechanism, and first and second electro-thermal actuators. The bi-stable mechanism includes a curved-beam disposed on a bending portion of a first cantilever, one end of the first cantilever having a driven portion disposed thereon. The first electro-thermal actuator includes a first beam of a first driven arm disposed on the bending portion. The second electro-thermal actuator includes a second beam of a second driven arm disposed on the bending portion. The ends of the first and second driven arms are adjacent to first and second sides of the driven arm, respectively. Also proposed is an optical switch device including a substrate, a third thermal actuator, and the optical switch member disposed on the substrate to form an optical switch device to thereby integrate the optical switch with variable optical attenuators on the substrate.

21 Claims, 10 Drawing Sheets

