Efficient Coupling of Electrostatic Optical Fiber Switch

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The study presents a novel concept of a coupling platform integrated with an out-of-plane optical switch and micro-ball lens array. The micro-ball lens array is batch-fabricated with the micro electro mechanical system (MEMS) technique and batch-assembled onto the platform. The out-of-plane optical switch consists of a self-latching vertical mirror on a suspension diaphragm. It can reduce the large motion space required for in-plane optical switches. The optical platform design enables control of the distance between the fiber, micro-ball lens and out-of-plane optical switch and increases their coupling efficiency. An electrostatic driving voltage is used to actuate the optical switch. Not only does this fabrication process provide an accurate coupling distance, it also reduces the micro-assembly cost.

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