

Title (en)
ACTIVE LARGE AREA AVALANCHE PHOTODIODE ARRAY

Title (de)
AKTIVE GROSSFLÄCHIGE MATRIX AUS LAWINENPHOTODIODEN

Title (fr)
RESEAU DE PHOTODIODES A AVALANCHE DE GRANDE SURFACE

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Abstract (en)
[origin: WO9859373A1] A large area avalanche photodiode device (300) that has a plurality of contacts (312) formed on a bottom side that are isolated from each other by various kinds of isolation structures. In one embodiment, a cavity (310) is formed in one layer of the avalanche photodiode that extends to a depletion region that exists in the layer as a result of a voltage applied to the device. The plurality of contacts are formed in the cavity so that each of the contacts are positioned substantially adjacent the depletion region. In another embodiment, a plurality of contacts are formed in a cavity and an isolation structure comprised of a grid of semiconductor material (340) is formed so as to be interposed between adjacent contacts. The isolation structure preferably forms a p-n junction with the surrounding semiconductor material and the p-n junction provides isolation between adjacent contacts. Preferably, the inner surface of the cavity is distal from the boundary of the depletion region, however, the isolation structure preferably extends into the depletion region. In another embodiment, a voltage is applied to the isolation structure so that a depletion region is formed in the surrounding semiconductor material so that adjacent contacts are electrically isolated from each other by a combination of a p-n junction and a high resistivity depletion layer.

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