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(54) **Title:** MONOLITHIC LED ARRAY AND A PRECURSOR THERETO

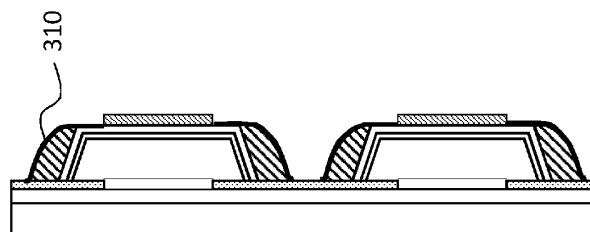


FIG. 15A

(57) **Abstract:** A monolithic LED array precursor comprising a plurality of LED structures sharing a first semiconductor layer, wherein the first semiconductor layer defines a plane of the LED array precursor, each LED structure comprising (i) a second semiconductor layer on the first semiconductor layer, having an upper surface portion parallel to the plane of the LED array precursor, the second semiconductor layer having a regular trapezoidal cross-section normal to the upper surface portion, such that the second semiconductor layer has sloped sides, (ii) a third semiconductor layer on the second semiconductor layer, having an upper surface portion parallel to the plane of the LED array precursor, the third semiconductor layer having a regular trapezoidal cross-section normal to the upper surface portion, such that the third semiconductor layer has sloped sides parallel to the sloped sides of the second semiconductor layer, (iii) a fourth semiconductor layer on the third semiconductor layer, having an upper surface portion parallel to the plane of the LED array precursor, the fourth semiconductor layer having a regular trapezoidal cross-section normal to the upper surface portion, such that the fourth semiconductor layer has sloped sides parallel to the sloped sides of the third semiconductor layer, (iv) a primary electrical contact on the fourth semiconductor layer, wherein the contact is only on the upper surface portion of the fourth semiconductor layer which is parallel to the plane of the LED array precursor, (v) electrically insulating, optically transparent spacers on the sloped sides of the fourth semiconductor layer, the spacers having an internal surface facing the sloped sides of the fourth semiconductor layer and an opposing external surface and (vi) a reflecting layer, electrically conducting extending over the external surface of the spacers, wherein the third semiconductor layer comprises a plurality of quantum well sub-layers, the quantum well sub-layers having a greater thickness on a portion parallel to the plane of the LED array precursor and a reduced thickness on a portion which is not parallel to the plane of the LED array precursor.

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