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TOYONAKA et al.(10) **Pub. No.: US 2024/0213389 A1**(43) **Pub. Date: Jun. 27, 2024**(54) **SEMICONDUCTOR PHOTODETECTOR****H01L 31/0304** (2006.01)**H01L 31/0352** (2006.01)(71) Applicant: **Lumentum Operations LLC**, San Jose,
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31/035281 (2013.01)(72) Inventors: **Takashi TOYONAKA**, Yokohama (JP);
Hiroshi HAMADA, Yokohama (JP);
Ryu WASHINO, Yokohama (JP);
Shigetaka HAMADA, Sagamihara
(JP); **Suguru KATO**, Sagamihara (JP)

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A semiconductor photodetector includes a substrate; a mesa structure on the substrate, the mesa structure being composed of some layers including an upper layer and a lower layer, the upper layer being an absorption layer of light, the lower layer being a wide bandgap layer with a bandgap wide enough not to absorb the light; and an insulating film covering a side of the mesa structure, each of the layers comprising single crystals of III-V semiconductors and having a top of a (100) plane, the top of the wide bandgap layer having a shape including a pair of vertices, in [0-11] and [01-1] directions, on a circumference of a minimum bounding circle.

