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- (71) 申请人: 苏州湃矽科技有限公司 (**PICMORE TECHNOLOGY (SUZHOU) LTD.**) [CN/CN]; 中国江苏省苏州市工业园区胜浦路 168 号, Jiangsu 215126 (CN)。
- (72) 发明人: 季梦溪 (**Ji, Mengxi**); 中国江苏省苏州市工业园区胜浦路 168 号, Jiangsu 215126 (CN)。李显尧 (**Li, Xianyao**); 中国江苏省苏州市工业园区胜浦路 168 号, Jiangsu 215126 (CN)。孙雨舟 (**Sun, Yuzhou**); 中国江苏省苏州市工业园区胜浦路 168 号, Jiangsu 215126 (CN)。

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(54) Title: SILICON OPTICAL MODULATOR

(54) 发明名称: 硅光调制器

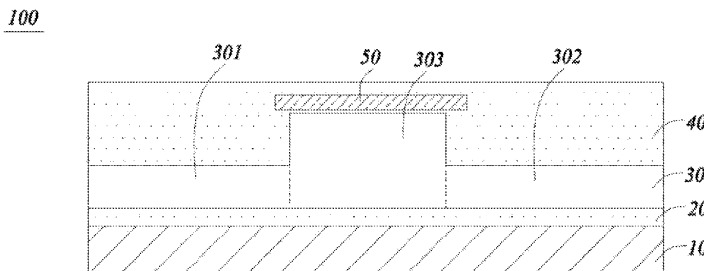


图1

(57) Abstract: The present invention discloses a silicon optical modulator. The silicon optical modulator comprises a substrate, a first insulating layer, a doped layer and a second insulating layer which are stacked from bottom to top. The doped layer comprises a first flat region, a projecting strip region and a second flat region which are sequentially arranged in a left-right direction. The first flat region has a first side portion and a second side portion, wherein the first side portion is connected to the first flat region to form a first conductive region of the doped layer, the second side portion is connected to the first flat region to form a second conductive region of the doped layer, and the first side portion and the second side portion are connected to form a junction capacitor of the doped layer. The silicon optical modulator further comprises a covering strip which is located above the projecting strip region and covers the connecting face between the first side portion and the second side portion. The refractive index of the covering strip is larger than the refractive index of the second insulating layer and the refractive index of the first insulating layer. In this way, the covering strip is arranged to significantly reduce the optical loss of a waveguide without compromising the modulation efficiency, so as to increase the electro-optic bandwidth as much as possible.

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根据细则4.17的声明:

- 关于发明人身份(细则4.17(i))
- 关于申请人有权申请并被授予专利(细则4.17(ii))
- 发明人资格(细则4.17(iv))

本国际公布:

- 包括国际检索报告(条约第21条(3))。

(57) 摘要: 本发明揭示了一种硅光调制器。硅光调制器包括自下而上层叠布置的衬底、第一绝缘层、掺杂层和第二绝缘层; 掺杂层包括在左右方向上依次排布的第一平板区、凸条区和第二平板区; 凸条区具有第一侧部和第二侧部, 第一侧部与第一平板区相接并构成掺杂层的第一导电性区域, 第二侧部与第一平板区相接并构成掺杂层的第二导电性区域, 第一侧部和第二侧部相接并构成掺杂层的结电容; 硅光调制器还包括覆盖条, 覆盖条位于凸条区上方并且覆盖第一侧部和第二侧部的相接面, 覆盖条的折射率大于第二绝缘层、第一绝缘层的折射率。如此, 覆盖条的设置, 能使波导的光学损耗显著降低, 且不影响调制效率, 以便于能够尽可能地提升电光带宽。