C L A I M S

1. An optical modulator comprising:

a p-type first semiconductor layer made of one of silicon and silicon-germanium formed on a clad layer;

an n-type second semiconductor layer formed from a III-V compound semiconductor made of at least three materials formed on an insulating layer disposed between said first semiconductor layer and said second semiconductor layer;

a first electrode connected to the first semiconductor layer; and

a second electrode connected to the second semiconductor layer,

wherein part of the first semiconductor layer and part of the second semiconductor layer are arranged so as to overlap each other via the insulating layer in a planar view, and form an optical waveguide portion where light to be modulated is guided in a direction parallel to a plane of the clad layer, and

the light waveguide portion satisfies a single mode condition.

2. The optical modulator according to claim 1, wherein the first electrode is formed on a region of the first semiconductor layer where the optical waveguide portion is not being formed.

3. The optical modulator according to claim 1, wherein the second semiconductor layer is formed from a plurality of stacked compound semiconductor layers, and among the plurality of compound semiconductor layers, the compound semiconductor layer closer to the insulating layer has a smaller band gap energy.

4. The optical modulator according to claim 1, wherein the first semiconductor layer is formed from a plurality of stacked semiconductor layers, and among the plurality of semiconductor layers, the semiconductor layer closer to the insulating layer has a smaller bandgap energy.

5. The optical modulator according to claim 2, wherein the second semiconductor layer is formed from a plurality of stacked compound semiconductor layers, and among the plurality of compound semiconductor layers, the compound semiconductor layer closer to the insulating layer has a smaller band gap energy.

6. The optical modulator according to claim 2, wherein the first semiconductor layer is formed from a plurality of stacked semiconductor layers, and among the plurality of semiconductor layers, the semiconductor layer closer to the insulating layer has a smaller

bandgap energy.

7. The optical modulator according to claim 3, wherein the first semiconductor layer is formed from a plurality of stacked semiconductor layers, and among the plurality of semiconductor layers, the semiconductor layer closer to the insulating layer has a smaller bandgap energy.