Study of SiGe MSM Photodetector with Asymmetry Electrodes

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ABSTRACT

Flourishing development because of the optical-fiber communications, make the demand for the photoelectric component heighten, most photoelectric components are semiconductor materials which adopt the clan of III-V the past, make the silicon photoelectric integrated circuit at present of material in relative weak tendency, because the content in the nature of silicon is abundant, high advantage of easy getting, makes low expenses that the material is obtained, this is why we to do one of the silicon deep motives that probe into of structure. This text is to do the discussion in the single crystal silicon / silicon germanium metal - semiconductor – metal only photoelectric characteristic of the measuring device, the metal is exposed to the respect we have used, such as nickel (Ni), gold (Au), chromium (Cr),etc., the metal electrode is under the symmetrical (symmetry) and asymmetric (asymmetry) situation, when the component takes the picture the light with shine all, on the electric current- the situation that the voltage characteristic contours change. In structure of the detection device component, we connect the surface heterojunction of silicon and silicon germanium. We give up the electrode of the general level type in metal electrode, and then adopt the rectilinear electrode. Quantity of experiment examine result, metal electrode when asymmetric, than reduce much more when symmetry dark current, reach the anticipated result of our experiment.

Keywords : Si/SiGe、metal - semiconductor - metal、symmetry、asymmetry、heterojunction

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