

Contacts contribution to the performance of Schottky Resonators and solar energy converters

Prof. Dr. A. F. Qasrawi

Department of Physics, Arab American University, Jenin, Palestine

Tel: 00970599379412, Email: aqasrawi@aauj.edu

Abstract:

The role of the type of the material which is used as contact to the semiconductors is investigated. Particularly, gold, silver, nickel and carbon conductive pastes are tested. It is found that, although the dark and light illuminated electrical injection from the contacts exhibit Ohmic behavior, the resulting drifted as well as the diffused short circuit photocurrents are not Ohmic. It was observed that, relative to their work functions, these metals created photosensitizing states that exchange role from recombination to trap states depending on both electric field and illumination intensity. These states limit the resulting current density of the Schottky solar cells. When the same devices were used as RF resonators, they show rather interesting different resonance types. In other word, each metal reflected a different resonance frequency region of particular signal quality. Furthermore, the anisotropy of the row material of the device played vital role on the resonance type being parallel or anti-parallel.