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Accession number:20114114414678
Title:New type far IR and THz schottky barrier detectors for scientific and civil application
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Source title:Advances in OptoElectronics
Abbreviated source title:Adv. Optoelectron.
Volume:2011
Issue date:2011
Publication year:2011
Article number:459130
Language:English
ISSN:1687563X
E-ISSN:16875648
Document type:Journal article (JA)
Publisher:Hindawi Publishing Corporation, 410 Park Avenue, 15th Floor, 287 pmb, New York, NY 10022, United States
Abstract:The results of an experimental investigation into a new type of VLWIR detector based on hot electron gas emission and architecture of the detector are presented and discussed. The detectors (further referred to as HEGED) take advantage of the thermionic emission current change effect in a semiconductor diode with a Schottky barrier (SB) as a result of the direct transfer of the absorbed radiation energy to the system of electronic gas in the quasimetallic layer of the barrier. The possibility of detecting radiation having the energy of quantums less than the height of the Schottky diode potential barrier and of obtaining a substantial improvement of a cutoff wavelength to VLWIR of the PtSi/Si detector has been demonstrated. The complementary contribution of two physical mechanisms of emanation detectionquantum and hot electrons gas emissionhas allowed the creation of a superwideband IR detector using standard silicon technology.
Number of references:10