Influence of Quasi-Ohmic Electrode on Performance of Semi-Insulting GaAs Detectors

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Abstract. The semi-insulting GaAs detectors of ionizing radiation operating at room temperature were fabricated with circular Ti/Pt/Au Schottky contact on the top side of the substrate and with three different types of quasi-ohmic contacts based on AuGe/Au, In/Au and Ni/Au on the back side. The quality of a semiconductor detector depends on the base semiconductor material and on the deposited metallization. In this paper, the current-voltage characteristics of detectors have been evaluated with respect to the type of quasi-ohmic contact. In view of the reverse current, breakdown voltage and homogeneity of the measured samples, AuGe/Au and Ni/Au metallization were found to be the most suitable for the fabrication of good SI GaAs detectors for spectrometry applications.