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Surface photocurrent nonuniformities in MSM detectors fabricated in gallium nitride heteroepitaxial layers

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Keywords

metal-semiconductor-metal (MSM), UV detector, gallium nitride, optical beam induced current (OBIC), scanning surface potential microscopy (SSPM)

Abstract

A correlation of surface potential maps and photocurrent distribution images in metal-semiconductor-metal (MSM) structures allows to notice spatial nonuniformities in detector principle of operation. This effect exists only for low frequency modulation of optical excitation. This phenomenon was explained by the inhomogeneity of potential barriers and surface states density in heteroepitaxial gallium nitride layers caused by their columnar structure.



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