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Analysis of interface states of FeO-Al₂O₃ spinel composite film/p-Si diode by conductance technique

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Abstract

The interface states and series resistance properties of the Al/FeO-Al₂O₃/p-Si diode were investigated by the capacitance (C) and conductance (G) measurements. The measured capacitance and conductance values were corrected to eliminate the effect of series resistance to obtain the real capacitance and conductance values of the diode. The C and G characteristics indicate the presence of interface states at the interface of the diode. The interface states density, N_{ss}, was determined using Hill-Coleman method, and it was found that the density of interface states is decreased with the frequency. The obtained results suggest that the series resistance and interface states affect significantly the electronic parameters of the Al/FeO-Al₂O₃/p-Si diode.

Keywords

KeyWords Plus: DEPENDENT SERIES RESISTANCE; MIS SCHOTTKY DIODES; SOL-GEL METHOD; ELECTRICAL-PROPERTIES; DIELECTRIC-PROPERTIES; SURFACE-STATES; MAGNETIC-PROPERTIES; CURRENT-VOLTAGE; FREQUENCY; NANOPARTICLES

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