

Abstract

Barrier height inhomogeneities on Pd/n-type 4H-SiC Schottky barrier diodes in the 300–800 K temperature range have been investigated. Palladium is known to form silicide above 673 K. Temperature dependent current-voltage (I - V) characteristics were analyzed. Barrier height (BH) and ideality factor (n) were found to be strongly temperature dependent. Barrier height increased, whilst ideality factor decreased with increasing in temperature and the Richardson plot showed some deviation from linearity. This was attributed to barrier inhomogeneities at the metal-semiconductor interface which resulted in a distribution of barrier heights. From the modified Richardson plot, the modified Richardson constant, A^{**} was found to be $155 \text{ Acm}^{-2}\text{K}^{-2}$ and $87 \text{ Acm}^{-2} \text{K}^{-2}$ in the 300–525 K and the 550–800 K temperature ranges respectively.