

Abstract Submitted
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Electrical Properties of Molybdenum/4H-Silicon Carbide Schottky Barrier Diode¹ SAI BHARGAV NAREDLA, Youngstown State University — Molybdenum has been recognized as a refractory metal suitable for high temperature applications. In this investigation, silicon carbide (SiC) Schottky diodes have been fabricated using molybdenum (Mo) as the Schottky contact. The Mo contacts were deposited by magnetron sputtering on the n-type 4H SiC at different temperatures from 25 °C to 900 °C. The electrical properties of the diodes were determined by current-voltage, capacitance voltage and current-voltage-temperature measurements. The as-deposited diodes exhibited energy barrier heights ranging from 0.99 to 1.69 eV and ideality factors varying from 1.03 to 1.71. Contacts deposited at 500 °C produced the optimum barrier height of 1.30 eV and ideality factor of 1.03. After annealing the sample at 500 °C for 24 hours diodes show a barrier height ranges from 1.25 to 1.30 eV and we believe that variation in electrical properties is due to change in crystal quality and formation of silicides. X-ray diffraction results shows the formation of MoSi₂, Mo₅Si₂.

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