

Electrical Characteristics of TaSi_xN_y Gate Electrodes For Dual Gate Si-CMOS Devices

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Abstract

In this work, the physical and electrical properties of TaSi_xN_y films are evaluated for gate electrode applications. MOS capacitors with TaSi_xN_y gates of varying N concentrations were fabricated. The stability of TaSi_xN_y/SiO₂/p-type Si stacks was studied at annealing temperatures of 700°C, 900°C, and 1000°C in Ar. When the nitrogen content exceeds 35 at.%, excellent stability of oxide thickness and gate current is observed for anneals up to 1000°C. The results also indicate that the workfunction of TaSi_xN_y is compatible with NMOS devices.