

## عنوان مقاله:

Effect of Temperature on Electrical Parameters of Phosphorous Spin-on Diffusion of Polysilicon Solar Cells

## محل انتشار:

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## خلاصه مقاله:

Effects of temperature on electrical parameters of polysilicon solar cells, fabricated using the phosphorous spin-on diffusion technique, have been studied. The current density-voltage characteristics of polycrystalline silicon solar cells were measured in dark at different temperature levels. For this purpose, a diode equivalent model was used to obtain saturation current densities measured at the required temperatures. The experimental results showed that the increase in temperature from 27 to 70 °C produced a rapid increase in the saturation current densities from 0.0003 to 0.0005 A. The changes in the open circuit voltage and the short circuit current density were found to be linear with the temperature variations: about 3 mV/°C reduction in the open circuit voltage was observed. Measurements of the short circuit current density revealed a very small dependency of the current density on the temperature variations. Accordingly, the short circuit current density increased from 17.8 to 18.4 mA with increase in temperature from 27 to 70 °C. Measurements of the output power versus load resistance were obtained at different temperature levels. The results showed that the output power dropped by 3% with temperature rise from 27 to 70 °C.

## کلمات کلیدی:

Temperature effect, reverse saturation current, open circuit voltage, Short Circuit Current, Output Power, polysilicon solar cell

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