

How efficient are Topcon bifacial cells?

After optimizing the passivation process, the industrial-grade TOPCon bifacial cells reached an efficiency (Eff), Voc, Jsc, and FF values as high as 25.4%, 721 mV, 42.2 mA/cm², and 83.5%, respectively.

How efficient are Topcon solar cells?

Due to the potential for high theoretical limit efficiency as high as 28.7% and low cost, TOPCon solar cells have become one of the prospective technologies in the photovoltaic (PV) market. At present, the highest efficiency for n-TOPCon has achieved 26.4% on an area of 330.15 cm² at JinkoSolar.

How to improve conversion efficiency of N-Topcon solar cells?

Improving the conversion efficiency of n-TOPCon solar cell is still a hot topic. The selective poly-Si based passivating contacts (Poly-SEs) are ideal candidates for reducing the parasitic absorption and contact resistivity of n-type silicon solar cells and for providing better current collection.

What is the efficiency of N-Topcon?

At present, the highest efficiency for n-TOPCon has achieved 26.4% on an area of 330.15 cm² at JinkoSolar. The TOPCon structure consists of an ultrathin silicon oxide (SiO_x) film and an n (+) doped polysilicon (poly-Si) layer, which uses the concept of tunnel selectivity engineering.

What is the Topcon structure?

The TOPCon structure consists of an ultrathin silicon oxide (SiO_x) film and an n (+) doped polysilicon (poly-Si) layer, which uses the concept of tunnel selectivity engineering. By employing thin SiO_x layer, it was possible to obtain the tunneling selectivity which allows electron transmission from Si to n+-poly-Si layer while holes are repelled.

How much J_0 does J_0 change with temperature?

For J_0 , J_0 exhibits a small change of approximately 1 fA/cm² with increasing T_{dep} from 770 to 810 °C (Fig. 8 b).

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