

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 cm<sup>2</sup> at JinkoSolar.

What are N-Topcon solar cells?

The appeal of n-TOPCon solar cells is in the incorporation of rear passivating contacts consisting of n-type polycrystalline silicon (poly-Si) and interfacial SiO<sub>x</sub> films, which provide low recombination current density ( $J_0$ ) and contact resistivity ( $r_c$ ) simultaneously.

How bifacial N-Topcon devices improve solar cell efficiency?

241.3 cm<sup>2</sup> -large bifacial n-TOPCon devices with 23.01% certified efficiency demonstrated. Using  $\geq 150$  nm of poly-Si and polished rear side improves the solar cell efficiency. 1-cell glass-glass laminates of the devices pass damp heat and thermal cycling tests. Roadmap to 25.5% efficiency presented.

How efficient are Topcon bifacial cells?

After optimizing the passivation process, the industrial-grade TOPCon bifacial cells reached an efficiency (Eff),  $V_{oc}$ ,  $J_{sc}$ , and FF values as high as 25.4%, 721 mV, 42.2 mA/cm<sup>2</sup>, and 83.5%, respectively.

How efficient are N-Topcon solar cells?

Cells with  $J_0, n+ = 5$  fA/cm<sup>2</sup> (50 nm) and  $J_0, \text{metal}, n++ = 73.8$  fA/cm<sup>2</sup> (110 nm) exhibited the efficiency gain of 0.12%. A pilot efficiency  $> 25.4\%$  of cells treated with optimized passivation process. Improving the conversion efficiency of n-TOPCon solar cell is still a hot topic.

What are the parameters of N-Topcon solar cells?

I - V parameters of n-TOPCon solar cells with 150 nm thick poly-Si in the passivating contact at the rear and different rear surface morphologies. Averages and standard deviations were obtained by measurements on 7-14 devices per group. Parameters of the best solar cell are also shown.



# 183 75-N-Type16BB Mono TOPCon Bifacial Solar Cell

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