

High-capacitance solar cells for solar modules





Overview

Does solar cell capacitance affect electrical characterization of photovoltaic (PV) modules?

The effect of solar cell capacitance in the electrical characterization of photovoltaic (PV) modules at Standard Test Conditions (STC) is known since the 1990s.

Do high-efficiency solar cells generate transient loss of power?

It is well-known at least since the 1990s [3] that the cell diffusion capacitance in high-efficiency solar cells generates transient loss (or gain) of power when these products are electrically characterized with fast voltage sweeps.

Is a single diode capacitive model sufficient?

The single diode capacitive model is sufficient to describe the effect at module level. In this paper, we suggested to introduce the effective cell capacitance per unit cell area: values at maximum power point have been measured on a set of 10 c-Si modules, including products with high capacitance.

What is a capacitor in a PV device?

The capacitor represents the accumulation of charges in the PV device. The capacitance of a PV device is attributed to both junction capacitance and diffusion capacitance, both of which are voltage dependent.



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A solar cell is a kind of electrochemical cell that converts solar energy into electrical energy with reasonable quantum conversion efficiency. 17 In general, the operation of a supercapacitor is ...

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[4BV.4.41_Monokroussos_27th_EU_PVSEC_2012_final](#)

Oct 18, 2023 · It would be desirable for both the PV industry and the test houses to have a method, which can measure accurately the performance of high-efficiency, high-capacitance ...





[I/V MEASUREMENT OF HIGH CAPACITANCE CELLS WITH...](#)

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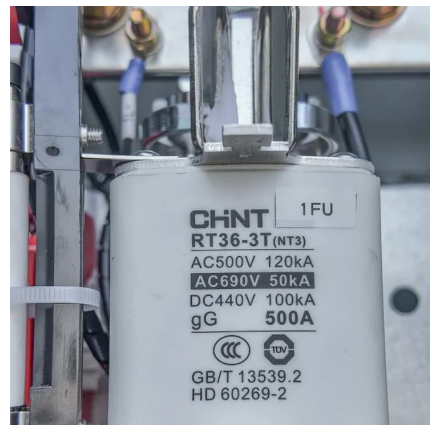


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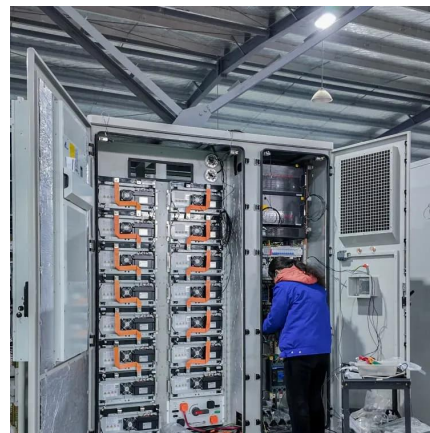


[Solar Cell Capacitance Determination Based ...](#)

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High-Efficiency Crystalline Photovoltaics , Photovoltaic ...

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May 1, 2022 · Abstract State-of-the-art solar cell technologies, such as hetero-junction cells or PERC cells, exhibit a time-dependent deformation of their current-voltage characteristics in ...

Photovoltaic modules transient response analysis and correction ...

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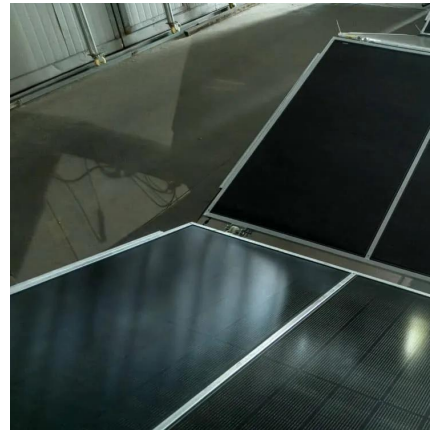
[Flash testing with CAC guarantee accurate I-V ...](#)

Sep 29, 2025 · The Capacitance Compensation (CAC) method enables accurate I-V curve and power measurements of high-efficiency ...



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Jan 1, 2012 · The effect of solar cell capacitance in the electrical characterization of photovoltaic (PV) modules at Standard Test ...



Longi claims world's highest efficiency for silicon solar cells

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[I-V Curve Tracing of High Efficiency PV Modules](#)

Dec 2, 2022 · The Physics of Module Capacitance
In addition to producing the commonly known DC current, PV modules also have AC or dynamic characteristics, chiefly PV cell capacitance, ...



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