

Solar panel efficiency comparison chart





Overview

The solar panel comparison chart I created below shows how difficult it can be to compare panels and brands. Listed are common panels between 190 and 230 watts of 5 common solar panel manufacturers (Canadian Solar, Kyocera, Sharp, SunPower, and Suntech). At first glance you can see that there isn't.

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Solar panel efficiency is the amount of sunlight (solar irradiance) that falls on the surface of a solar panel and is converted into electricity. Due to the many advances in photovoltaic technology over the last decade, the average panel conversion efficiency has increased from 15% to over 24%.

The rating table below compares published efficiency of top solar panel manufacturers. I have to note however that the data listed in the specification sheets are normally measured at an optimum load of the module under some ideal conditions called Standard Test Conditions (STC). This is of course.

Most solar panels are at least 20% efficient, but the best ones are over 22% efficient. We reviewed the efficiency ratings of hundreds of home solar panel models and found that five brands stood out: Maxeon, Qcells, Canadian Solar, REC, and Panasonic. Highly efficient solar panels can generate.

In this annual roundup, we break down the best solar panels of 2025 across all major categories—based on efficiency, performance, and use case—so you can make an informed choice whether you're outfitting a rooftop, RV, or even a spacecraft. Thin-film panels using CIGS (Copper Indium Gallium).

NREL maintains a chart of the highest confirmed conversion efficiencies for research cells for a range of photovoltaic technologies, plotted from 1976 to the present. Learn how NREL can help your team with certified efficiency measurements. Access our research-cell efficiency data. [DOWNLOAD CHART.](#)



SolarReviews is the leading American website for solar panel reviews and solar panel installation companies. Our industry experts have a combined three decades of solar experience and maintain editorial independence for their reviews. No company can pay to alter the reviews or review scores shown. Which solar panels are most efficient?

The most efficient solar panel available for homes today is Maxeon's 440-watt panel at 22.8% efficiency. Solar panel efficiency is the percentage of incoming sunlight that a single solar panel can convert into electricity. Maxeon, Qcells, Canadian Solar, REC, and Panasonic currently offer the most efficient solar panels on EnergySage.

How efficient are solar panels in 2025?

Basically, the more efficient solar panels are, the more power they can generate. In 2025, its standard for residential solar panels to be between 21% and 22% efficient – but many brands are reaching ratings in the 23% range. Here are the most efficient solar panels that are currently available in 2025: Is solar panel efficiency important?

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How efficient is a solar panel?

You'll see this ability shown as a percentage – so if a solar panel is 22% efficient, that means it can turn 22% of the natural light that hits it into electricity for your home. To measure solar panel efficiency, manufacturers use standard test conditions (STC), a universally accepted controlled environment used by companies all over the world.

What is a solar panel efficiency rating?

A solar panel's efficiency measures its ability to convert sunlight into usable electricity. If the sun shines on a solar panel with a 20% efficiency rating, 20% of the sun's energy will convert to solar energy in ideal conditions.

How efficient are large-format solar panels?

For example, LONGi's Hi-MO X10 commercial-size module reaches up to 24.8% efficiency and 670W output, while several 700W+ utility-scale modules from Trina Solar, Risen, TW Solar, and Huasun now exceed 24.2–24.8% efficiency, highlighting how innovation at the large-format level continues to raise the bar for the entire industry.



How is solar panel efficiency measured?

Solar panel efficiency is measured under standard test conditions (STC) based on a cell temperature of 25 ° C, solar irradiance of 1000W/m² and Air Mass of 1.5. A solar panel's efficiency (%) is calculated by dividing the module power rating (W), or P_{max}, by the total panel area in square meters at an irradiance level of 1000W/m² (STC).



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[Best Solar Panels of 2025: A Comprehensive Guide](#)

As the demand for clean energy grows, the solar panel market continues to evolve rapidly. In this annual roundup, we break down the best solar panels of 2025 across all major categories--based on efficiency, performance, ...

[Solar Panels: Browse And Compare Products](#)

Solar panels are the key component in any residential, commercial, or utility-scale solar energy system. Use this guide to compare solar panel options and understand which products are best for your installation.



Solar Inverter Comparison Chart

Solar Inverter Comparison Chart Below is our detailed technical comparison of the most popular string solar inverters available in the Australian, European, Asian and US markets, plus the well-known Enphase microinverter. Most ...



[Top 10 Most Efficient Solar Panels of 2025 \(Ranked ...\)](#)

Solar panel efficiency refers to how effectively a panel converts sunlight into usable electricity. Higher efficiency means more power from less



space, which is crucial for businesses aiming to maximise energy production ...



Solar Panel Efficiency

High-efficiency panels can increase your power output per panel, allowing you to create more energy with less space and sunlight. Here are the most efficient solar panels available on the solar marketplace. High-efficiency solar panels by ...

Most Efficient Solar Panels in 2025

Warranty period of the solar panels. Eco-friendly credentials. Weight and dimensions. Heat resistance. Power generation ability. Most Efficient Solar Panels Comparison Table In the table below you can see a quick ...



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