

Be wary of solar panels with multiple circuits!

While the claim may be that this type of panel has superior shade resistance, the results can be very different.

FACT: The smaller the cell size, the less shading it requires to be 100% shaded. The same amount of shade that completely covers a small cell might only cover $\frac{1}{4}$ of a larger cell. Larger cells are better for shade resistance.

FACT: If just one cell is 100% hard shaded, the output from that series string of cells will be zero, or close to zero.

FACT: Silicon solar cells consume power as well as produce power. If a cell is shaded, it will consume power from the other cells in the series string, resulting in diminished output and heating up of the shaded cell.

FACT: If several series strings of cells are connected in parallel without the installation of blocking diodes, the power from good strings will feed into a shaded string resulting in diminished panel output and the chance of cells burning.

FACT: Blocking diodes prevent back-feeding in parallel circuits, but reduce voltage output by 0.7v.

FACT: By-Pass diodes prevent cell burning ("Hot-spots") and do not consume any power or diminish panel output.

FACT: The more cells and electrical connections there are on a panel, the more output-reducing series and shunt resistance the panel will exhibit, and the more chance of a connection failure, particularly if the panel is flexed.

For best results, look for a panel with large, high efficiency cells, in one series string, with by-pass diodes protecting any string of 50w or greater. Blocking diodes must be installed on circuits or panels connected in parallel.