

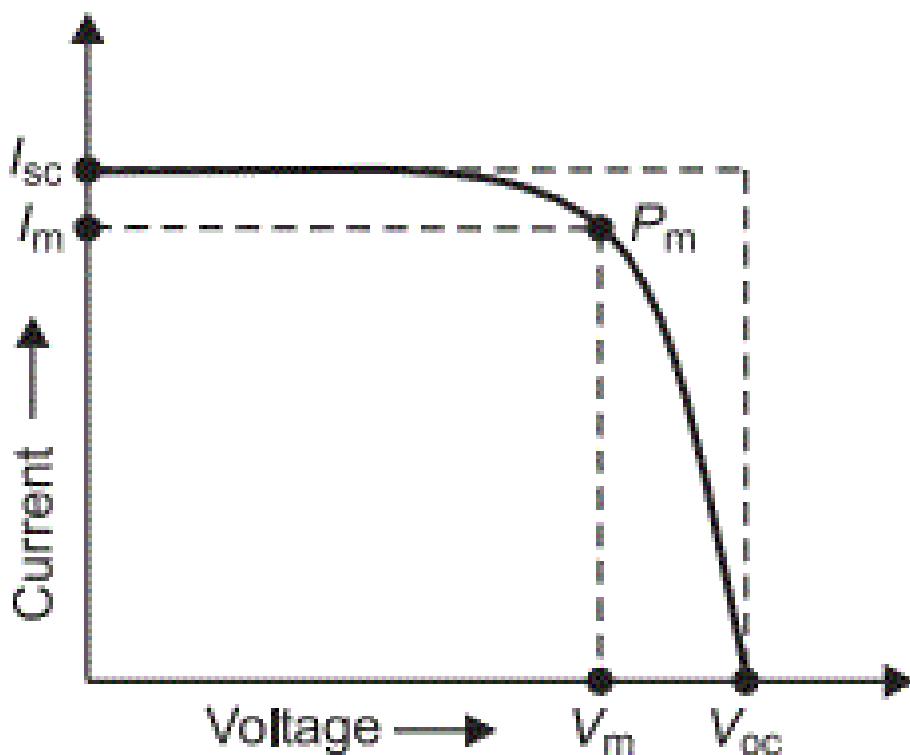
Solar cell-V-I characteristics:

Principle of solar cell

Silicon crystals are laminated into n-type and p-type layers, stacked on top of each other. Light striking the crystals induces the “photovoltaic effect,” which generates electricity. The electricity produced is called direct current (DC) and can be used immediately or stored in a battery.

Solar Cell I-V Characteristic Curves is graphs of output voltage versus current for different levels of insulation and temperature and can tell you a lot about a PV cell or panel's ability to convert sunlight into electricity.

V-I characteristics





While sunlight falling on the cell the some photons of the light are absorbed by solar cell. Some of the absorbed photons will have energy greater than the energy gap between valence band and conduction band in the semiconductor crystal.

Hence, one valence electron gets energy from one photon and becomes excited and jumps out from the bond and creates one electron-hole pair. These electrons and holes of e-h pairs are called light-generated electrons and holes. The light-generated electrons near the p-n junction are migrated to n-type side of the junction due to electrostatic force of the field across the junction. Similarly the light-generated holes created near the junction are migrated to p-type side of the junction due to same electrostatic force.

In this way a potential difference is established between two sides of the cell and if these two sides are connected by an external circuit current will start flowing from positive to negative terminal of the solar cell.

Characteristic features of solar energy

Solar energy is an inexhaustible, clean, renewable energy source.

Photovoltaic cells are a key component in solar power generation.

Thorough research on output characteristics is of far-reaching

importance.<https://images.app.goo.gl/Evsggm8SDoZJDC5C9>