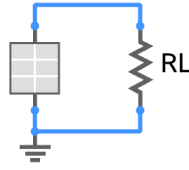


solar_iv_1.sqproj



I-V characteristics for different r_{series} values

The purpose of the simulation set-up shown in the figure is to observe the effect of the series resistance¹ on the performance of a solar cell, with a fixed photo current. In the solve block, for each value of R_{series} , the load resistance R_L is varied, and the current and power are stored. This procedure amounts to varying the cell voltage from 0 V to V_{oc} , and it gives the I - V curve for one specific value of R_{series} .

Exercise Set

1. Run the simulation. Plot I versus V , and observe how R_{series} affects the solar cell performance.
2. Plot P (output power of the cell) versus V . For each value of R_{series} , note down the maximum power P_{max} . Now plot manually P_{max} on linear scale versus R_{series} on log scale.

¹Note that by series resistance, we mean the *internal* series resistance of the solar cell; it should not be confused with R_L which is *external*.