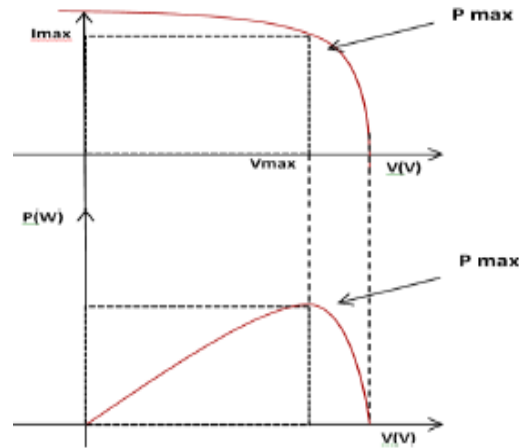


1 PHOTOVOLTAIC EFFECT

The energy that a panel can deliver depends on the photons that fall on the surface of the panel; These are absorbed and produce a flow of electrons when each photon delivers the energy it has. Solar panels are made up of multiple photovoltaic cells which transform energy from sunlight into electrical energy. These cells are capable of generating voltages, currents and power, which are determined by the level of radiation it receives in units of (W / m^2) and temperature. The behavior of the photovoltaic effect that occurs in the panels is defined by the $V * I$ curves under different operating conditions. [1] [2] [3] [4]



Characteristic curve of solar panel $V * I$ [7]

Solar Panel

The voltage input to our SEPIC circuit will be a 17.5V 20W solar panel. The specifications of this are seen below in Figure below

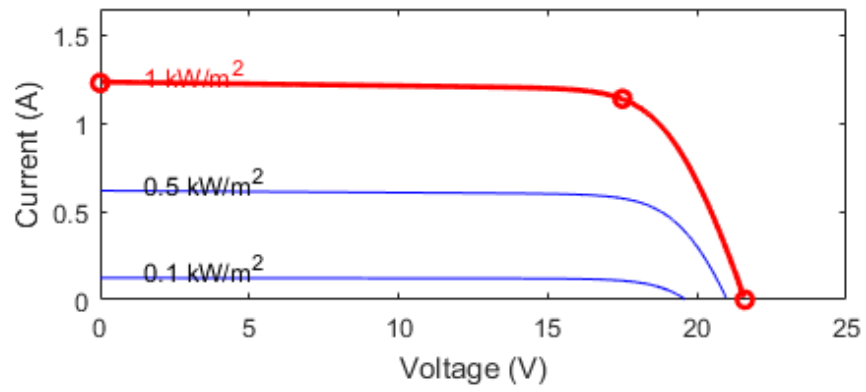
RNG-20D

20W Monocrystalline Solar Panel

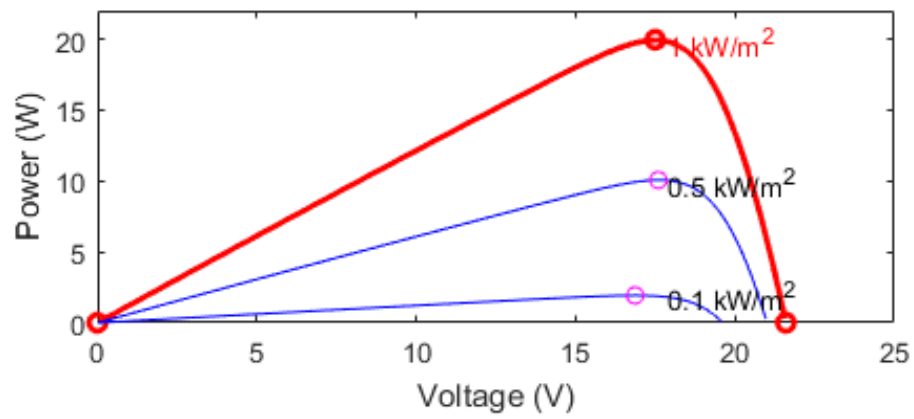
Electrical Data

Maximum Power at STC*	20 W
Optimum Operating Voltage (V_{mp})	17.5 V
Optimum Operating Current (I_{mp})	1.14 A
Open Circuit Voltage (V_{oc})	21.6 V
Short Circuit Voltage (I_{sc})	1.23 A
Module Efficiency	12.33%
Maximum System Voltage	600 VDC UL
Maximum Series Fuse Rating	10 A

Specifications RENOGY RNG-20D solar panel



Voltage vs. current on specified panel



Voltage vs power on specified panel