

# Device Modeling Report

Components: Solar Cell

Product Name:SX310

Manufacture:BP Solar

Kawatta-



All rights reserved © 2020 Kawatta-

## OverView

This report shows LTspice simulation results of SX310 characteristics from datasheet.

I-V and P-V characteristics work in STC condition of datasheet.

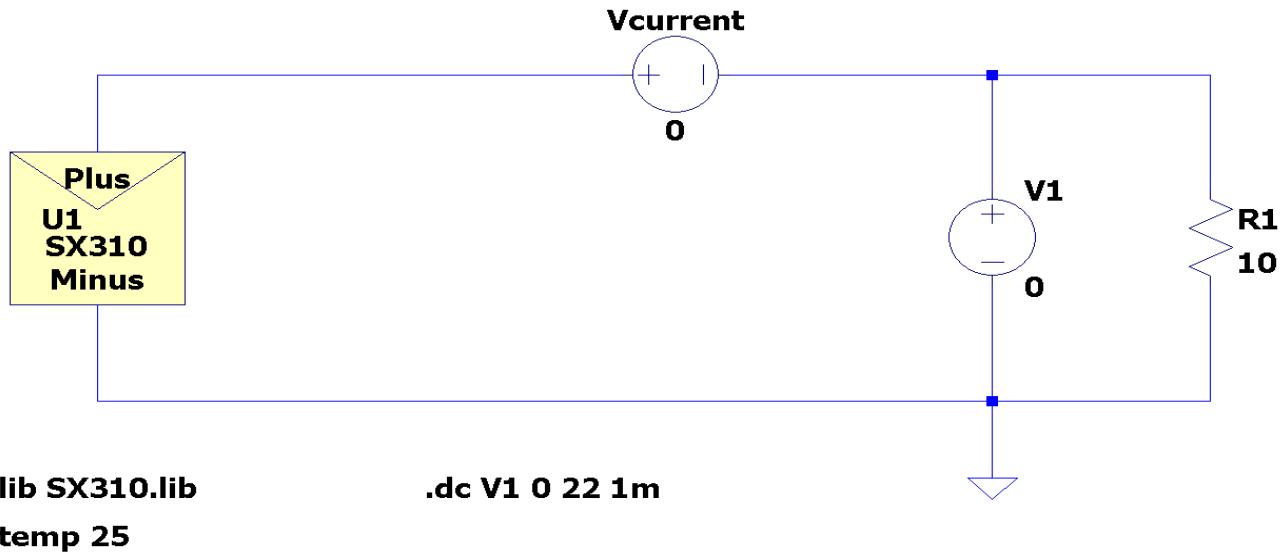
\*STC is Irradiance 1000W/m<sup>2</sup>, AM1.5 spectrum, module temperature 25°C

\*This model only works at 25°C of LTspice setting and works voltage from 0V – 21V

## Specification of electrical performance form datasheet (STC)

| Parameter                    | Value |
|------------------------------|-------|
| Maximum Power (Pmax)         | 10W   |
| Maximum Power Voltage (Vmpp) | 16.8V |
| Maximum Power Current (Impp) | 0.59A |
| Open Circuit Voltage (Voc)   | 21V   |
| Short Circuit Current (Isc)  | 0.69A |

## Simulation Circuit



\*Vcurrent works as Ammeter.

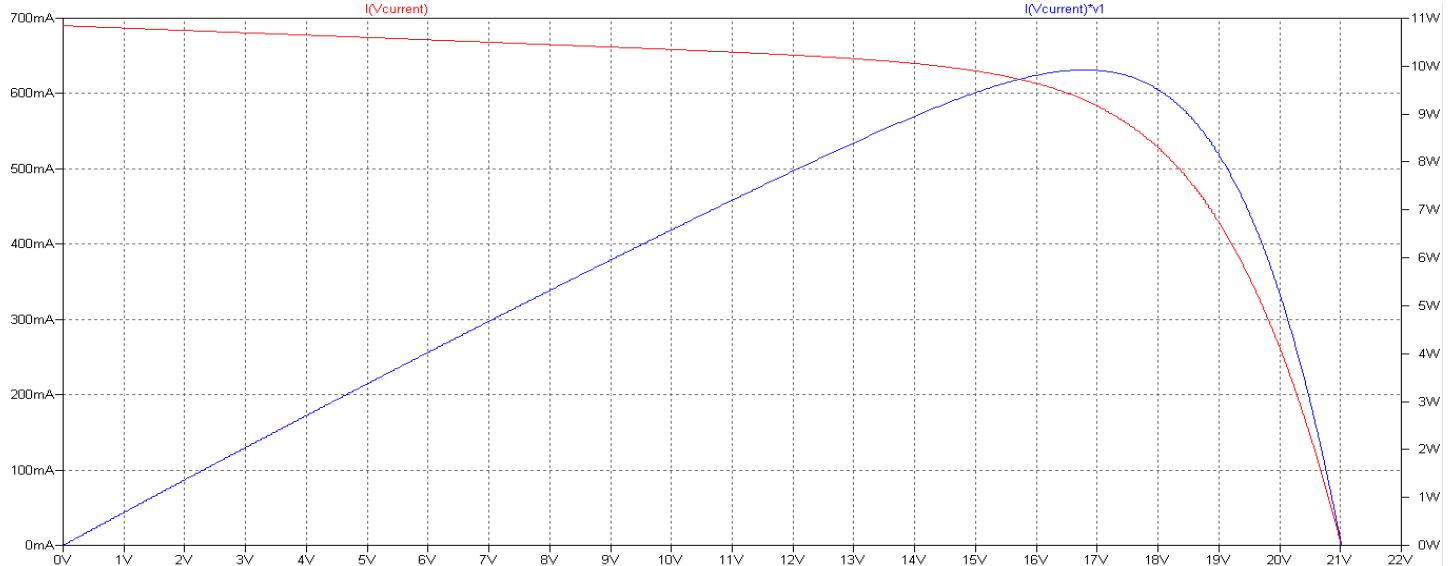
\*V1 works as source of dc sweep of SX310(0V- 22V).

(\*This model works from voltage 0V – 21V)

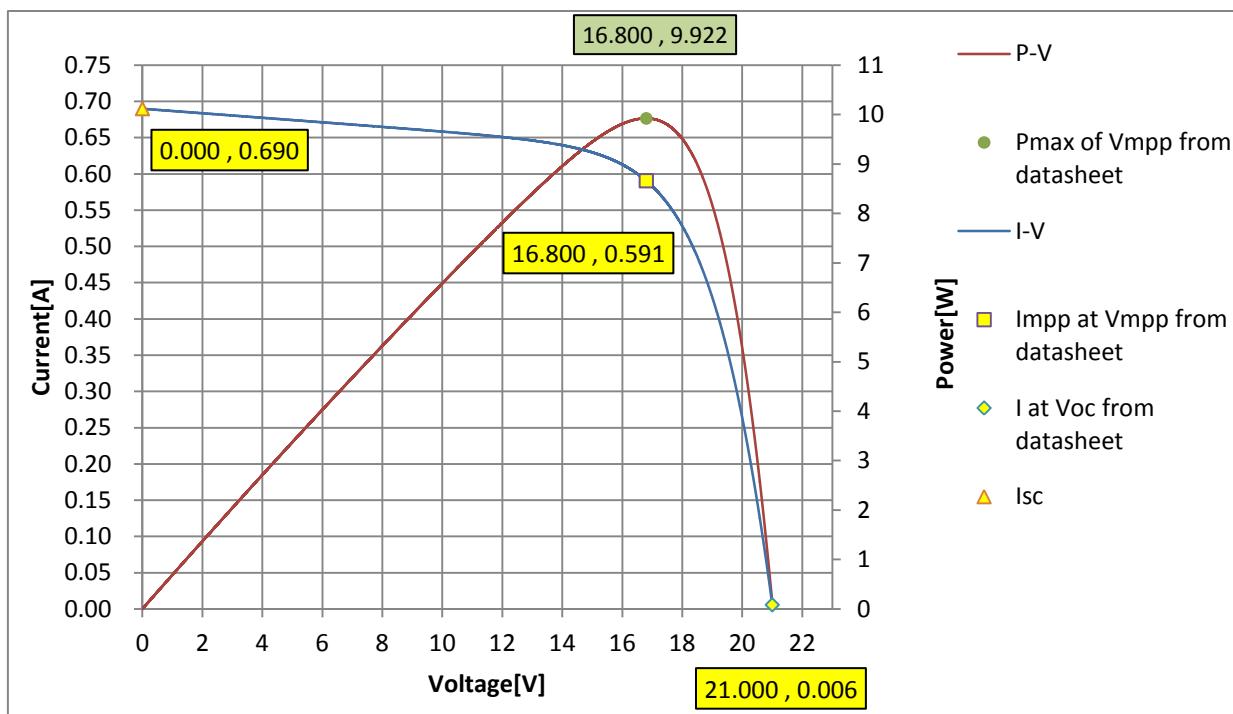
\*R1 is load resistance (arbitrary value, EX:10Ω).

\*“.temp” works as temperature in STC(25°C)

## Simulation result



## Results of applied to voltage value of datasheet(Electrical performance in STC)



## Error between specification and Simulation.

| Symbol          | Specification | Simulation | %Error  |
|-----------------|---------------|------------|---------|
| Isc             | 0.690         | 0.690      | 0.000%  |
| Voc             | 21.000        | 21.018     | 0.086%  |
| Vmpp            | 16.800        | 16.789     | -0.065% |
| Impp            | 0.590         | 0.591      | 0.162%  |
| Pmax(Impp*Vmpp) | 9.912         | 9.922      | 0.096%  |