

Device Modeling Report

Components: Solar Cell
Product Name: RNG-50DB-H
Manufacture: RENOGY

Kawatta-



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Overview

This report shows LTspice simulation results of RNG-50DB-H characteristics from datasheet.

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

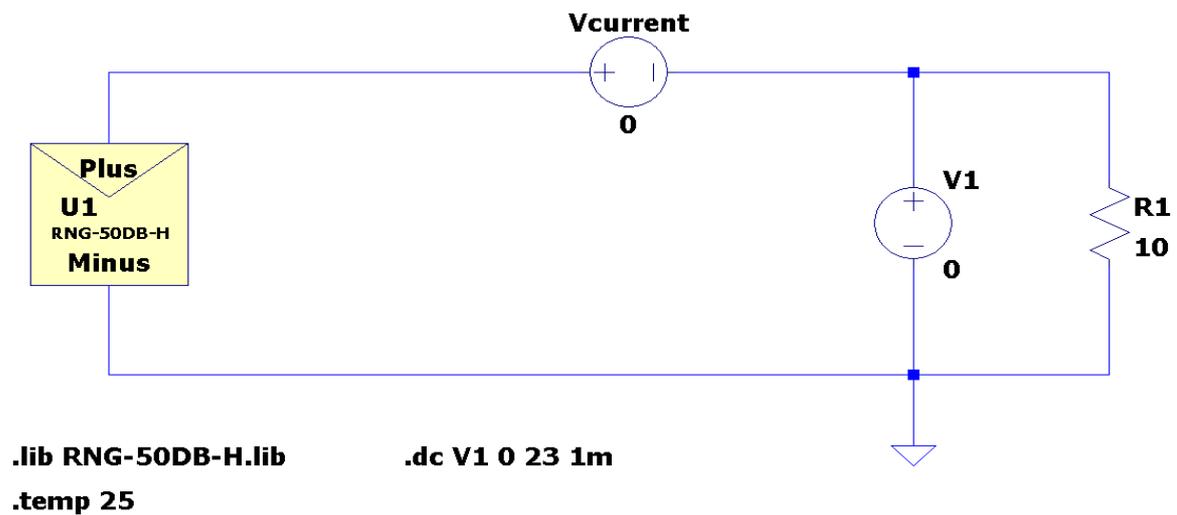
*STC is Irradiance 1000W/m², AM1.5 spectrum, module temperature 25°C

*This model only works at 25°C of LTspice setting and works voltage from 0V – 22.6V

Specification of electrical performance form datasheet (STC)

Parameter	Value
Maximum Power (Pmax)	50W
Maximum Power Voltage (Vmpp)	18.5V
Maximum Power Current (Impp)	2.71A
Open Circuit Voltage (Voc)	22.6V
Short Circuit Current (Isc)	2.92A

Simulation Circuit



*Vcurrent works as Ammeter.

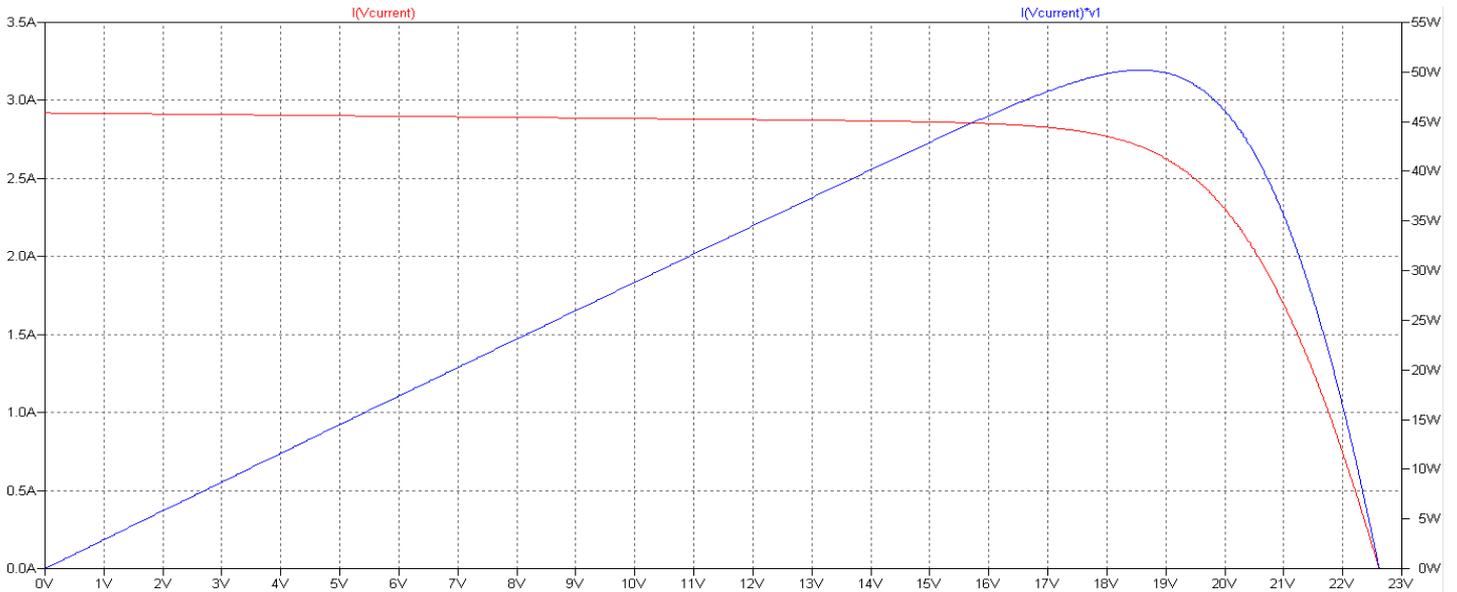
*V1 works as source of dc sweep of RNG-50DB-H(0V- 23V).

(*This model works from voltage 0V – 22.6V)

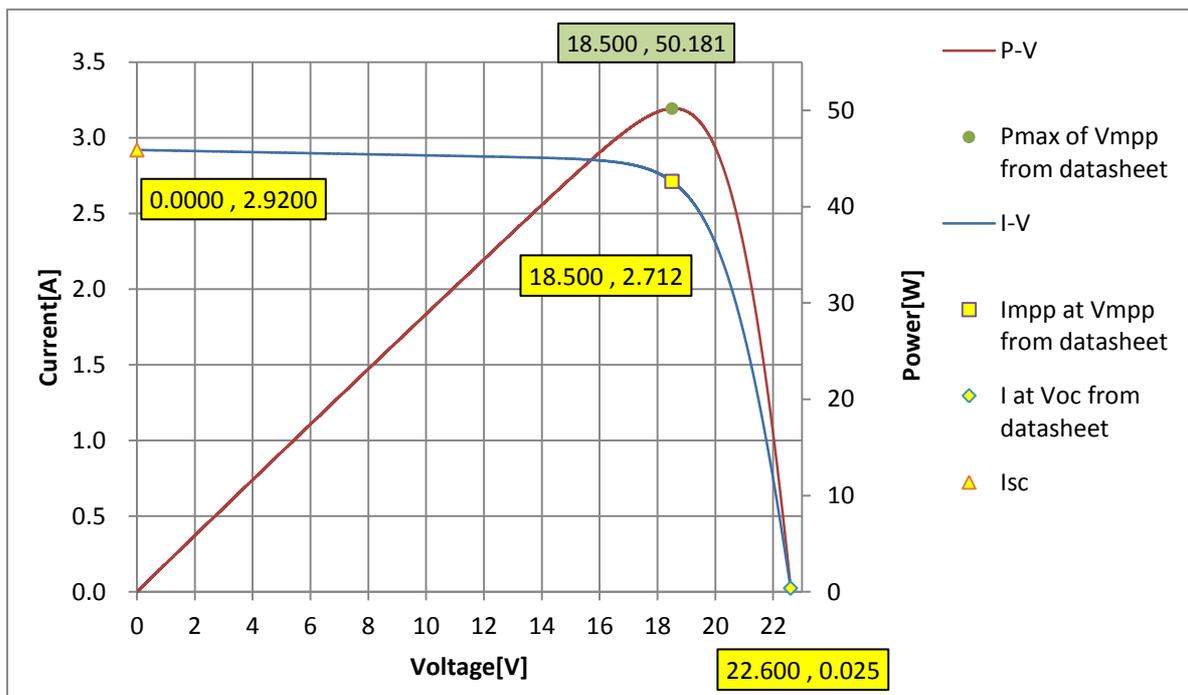
*R1 is load resistance (arbitrary value, EX:10Ω).

*“.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
I_{sc}	2.920	2.920	0.000%
V_{oc}	22.600	22.619	0.084%
V_{mpp}	18.500	18.558	0.314%
I_{mpp}	2.710	2.704	-0.212%
$P_{max}(I_{mpp} \cdot V_{mpp})$	50.135	50.186	0.101%

change history

DATE	DETAILS
2021/1/4	New