



## PV module - TSM-590NEG19RC.20

Manufacturer	Trina Solar	Commercial data	
Model	TSM-590NEG19RC.20	Availability :	Prod. Since 2022
		Data source :	UL 2022
Pnom STC power (manufacturer)	590 W <sub>p</sub>	Technology	Si-mono
Module size (W x L)	1.134 x 2.382 m <sup>2</sup>	Rough module area (A <sub>module</sub> )	2.70 m <sup>2</sup>
Number of cells	2 x 66	Sensitive area (cells) (A <sub>cells</sub> )	2.52 m <sup>2</sup>
<b>Specifications for the model (manufacturer or measurement data)</b>			
Reference temperature (T <sub>Ref</sub> )	25 °C	Reference irradiance (G <sub>Ref</sub> )	1000 W/m <sup>2</sup>
Open circuit voltage (V <sub>oc</sub> )	47.8 V	Short-circuit current (I <sub>sc</sub> )	15.72 A
Max. power point voltage (V <sub>mpp</sub> )	39.7 V	Max. power point current (I <sub>mpp</sub> )	14.86 A
=> maximum power (P <sub>mpp</sub> )	589.9 W	Isc temperature coefficient (muIsc)	5.9 mA/°C
<b>One-diode model parameters</b>			
Shunt resistance (R <sub>shunt</sub> )	500 Ω	Diode saturation current (I <sub>oRef</sub> )	0.016 nA
Series resistance (R <sub>serie</sub> )	0.20 Ω	Voc temp. coefficient (MuVoc)	-115 mV/°C
Specified P <sub>max</sub> temper. coeff. (muP <sub>MaxR</sub> )	-0.30 %/°C	Diode quality factor (Gamma)	1.02
		Diode factor temper. coeff. (muGamma)	0.000 1/°C

## Reverse Bias Parameters, for use in behaviour of PV arrays under partial shadings or mismatch

Reverse characteristics (dark) (B <sub>Rev</sub> )	3.20 mA/V <sup>2</sup>	(quadratic factor (per cell))	
Number of by-pass diodes per module	3	Direct voltage of by-pass diodes	-0.7 V

Model results for standard conditions (STC: T=25 °C, G=1000 W/m<sup>2</sup>, AM=1.5)

Max. power point voltage (V <sub>mpp</sub> )	39.4 V	Max. power point current (I <sub>mpp</sub> )	14.98 A
Maximum power (P <sub>mpp</sub> )	590.1 W <sub>p</sub>	Power temper. coefficient (muP <sub>mpp</sub> )	-0.30 %/°C
Efficiency(/ Module area) (Eff <sub>mod</sub> )	21.8 %	Fill factor (FF)	0.785
Efficiency(/ Cells area) (Eff <sub>cells</sub> )	23.4 %		

