



مَعَامِلُ الْفِيزِيَاءِ
PHY-LAB

Solar Cell Analysis Report

Parameter Extraction & Temperature Prediction

Document & Setup Specifications:

Attached Sample File:	Photowatt-PWP201-Polycrystalline-Module 2.txt
Measured Temperature:	45.0 C
Cells in Series (Ns):	36

1. Extracted Parameters (Optimal Solution)

Series Resistance (R_s):	1.162178 Ohms
Shunt Resistance (R_{sh}):	1191.01 Ohms
Ideality Factor (n):	1.38213
Saturation Current (I_0):	4.6199e-06 A
Photo-generated Current (I_{ph}):	1.02970 A
Fitting Error (RMSE):	2.416690e-03 A

2. Experimental Figures of Merit (at 45.0 C)

Short-Circuit Current (I_{sc}):	1.0315 A
Open-Circuit Voltage (V_{oc}):	16.7785 V
Maximum Power (P_{max}):	11.5622 W
Fill Factor (FF):	0.6681

3. Predicted Figures of Merit Summary

Temp (C)	I_{sc} (A)	V_{oc} (V)	P_{max} (W)	Fill Factor
25	1.0185	18.7051	13.3430	0.7004
33	1.0226	17.9447	12.6176	0.6876
45	1.0287	16.8042	11.5273	0.6668
60	1.0363	15.3595	10.1660	0.6387

4. Derived Temperature Coefficients

dV_{oc}/dT :	-95.59 mV/C
dI_{sc}/dT :	0.51 mA/C
dP_{max}/dT :	-0.0908 W/C

5. Characteristic Curves (I-V and P-V)

