Simplify Your Solar Cell Testing with Keithley’s Precision Measurement Solutions

Electrical characterization of a variety of solar cell (Photovoltaic) technologies, including:

- Mono Crystalline Si
- Poly Crystalline Si
- Amorphous Si
- CIGS
- CdTe
- Polymer Organic

Measurement of key parameters including:

- Open circuit voltage (Voc)
- Short circuit current (Isc)
- Maximum power output (Pmax)
- Voltage at Pmax (Vmax)
- Fill factor (ff)
- Series resistance (Rs)
- Shunt resistance (Rsh)
- Conversion efficiency (η)
- Doping density (N)
- Cell resistivity
- Defect density

Keithley’s solutions for solar cell I-V and C-V characterization provide the most accurate measurements available without the hassles of integrating separate instruments or writing complicated programs.

MODEL 4200-SCS SEMICONDUCTOR CHARACTERIZATION SYSTEM

- Fully integrated I-V and CV turn key solution with intuitive graphical user interface
- Built-in libraries for extracting key cell parameters, and advanced analytical and formulation tools

SERIES 2400 OR 2600A SOURCEMETER® INSTRUMENTS

- 4-quadrant design provides both source and sink capability for complete IV
- All-in-one solution for IV characterization with the combined functionality of a precision power supply, high precision DMM, and electronic load
KEY SOLAR CELL PARAMETERS AND MEASUREMENT TECHNIQUES

These measurements were made using Keithley’s solutions for solar cell testing.

Doping Density (N) of a Crystalline-Si solar cell can be derived from capacitance-voltage sweep. (This feature is available on Model 4200-SCS with C-V option.)

Typical forward biased I-V characteristic of a solar cell.

Series resistance (Rs) can be determined from a forward I-V sweep of a solar cell at multiple light intensities.

Shunt resistance of a solar cell can be estimated from a reverse bias I-V sweep.

PARAMETER ANALYZER

Model 4200-SCS Semiconductor Characterization System

- 4-quadrant operation (source/sink)
- 1A at 20V
- 100mA at 200V
- Capacitance-Voltage (C-V) option
- Turn key solution with built-in software for complete data analysis and cell parameter calculations
- Combine with Model 707A Switch Matrix for multi-cell testing.

SOURCE AND MEASURE INSTRUMENTS

Model 2602A SourceMeter Instrument

- 4-quadrant operation (source/sink)
- Dual channel
- 3A at 6V
- 10A at 20V pulse
- 1A at 20V
- Built-in TSP® Express software for quick and easy IV test
- ACS Basic Edition software option with preconfigured solar project
- Combine with Series 3700 System Switch and Multimeter for multi-cell testing.

Model 2440 or 2425 SourceMeter Instruments

- 4-quadrant operation (source/sink)
- 5A at 10V (Model 2440)
- 3A at 20V (Model 2425)
- 1A at 100V (Model 2425)
- Built-in sweep functions for convenient I-V profiling
- 6 different models available for a wide range of I-V requirements
- Combine with Models 7001 or 7002 Switch Mainframes for multi-cell testing.

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A GREATER MEASURE OF CONFIDENCE


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