Sinton instruments

PRODUCT NOTE

WCT-120 — Offline Wafer Lifetime Measurement

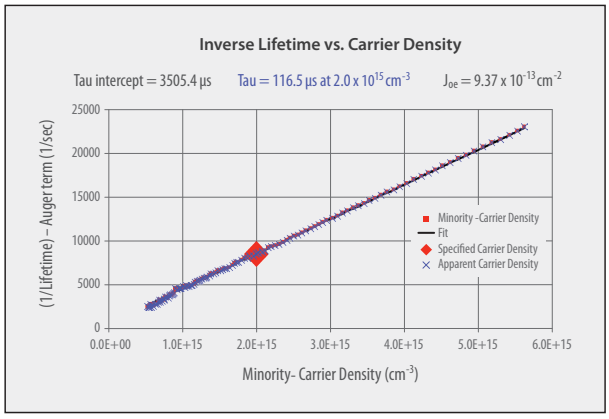
The WCT-120 is an affordable, tabletop silicon lifetime and wafer metrology system, suitable for both device research and industrial process control.

The wafer measurement instrument offering the best available calibrated analysis of carrier recombination lifetime. Fully compliant with SEMI Standard PV-13.

Product Overview

WCT instruments showcase our unique measurement and analysis techniques, including the SEMI Standard Quasi-Steady-State Photoconductance (QSSPC) lifetime measurement method developed by Sinton Instruments in 1994. The QSSPC technique is ideal for monitoring multicrystalline wafers, dopant diffusions, and low-lifetime samples. This method complements the use of the transient photoconductance technique that is also standard on this instrument.

The QSSPC lifetime measurement also yields the implied open-circuit voltage (versus illumination) curve, which is comparable to an I-V curve at each stage of a solar cell process.



Sinton instruments' analysis yields a calibrated carrier injection level for each wafer, so you can interpret lifetime data in a physically precise way. Specific parameters of interest are displayed and logged for each measurement.

WCT System Capabilities

Primary application: Step-by-step monitoring and optimization of a fabrication process

Other applications:

- Monitoring initial material quality
- Detecting heavy metals contamination during wafer processing
- Evaluating surface passivation and emitter dopant diffusion
- Evaluating process-induced shunting using the implied I-V measurement

Key Features

- Single-click identification of key characteristics of silicon wafers, including sheet resistance, lifetime, trap density, emitter saturation current density, and implied voltage
- Calibrated carrier-lifetime versus injection level yields results that are universally accepted

WCT Specifications

Instrument Specifications

Available measurements
- Lifetime
- Resistivity
- Emitter saturation current density
- Trap density
- One-sun Voc

Lifetime measurement range
- 100 ns to greater than 10 ms

Measurement (analysis) modes
- QSSPC, transient, and generalized lifetime analysis

Resistivity measurement range
- 3–600 (undoped) Ohms/sq.

Available light bias range
- 0–50 suns

Typical calibrated injection range
- 10^{13}–10^{16} cm^{-3}

Available spectrum
- White-light and IR illumination

Sensor area
- 40-mm diameter

Sample size, standard configuration
- Standard diameter: 40–210 mm
- Smaller sizes may be measured

Wafer thickness range
- 10–2000 µm (calibrated)
- Other thicknesses may be measured

Warranty
- One-year limited warranty on all parts and software
- Service agreement also available

Standards
- Complies wtih SEMI Standard PV-13

CE

Facility Requirements

Ambient operating temperature
- 20°C–25°C

Power requirements
- WCT-120: 40 W
- Computer with monitor: 200 W
- Light source: 60 W

Dimensions
- 22.5 cm W x 28 cm D x 57 cm H

Universal mains voltage
- 100–240 VAC 50/60 Hz

Special facilities requirements

None

WCT System Components

- WCT-120 instrument, signal processing unit, signal cables
- Programmable flashlamp with bandpass filter
- Windows PC with installed, configured software and monitor
- Sinton Instruments data acquisition and analysis software package
- High-resolution, high-speed data acquisition with simultaneous sampling and common-mode rejection
- Available with Suns-Voc instrument

Purchasing Information

For a quote, please contact quotes@sintoninstruments.com

We are happy to accommodate custom requirements. Please inquire about a quote for your specific needs.

Quotes are valid for 60 days. Please allow 10 weeks for delivery from date of purchase order.

For our full product line, visit our website at: www.sintoninstruments.com

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