

WCT-120TS: Temperature-Dependent Lifetime Measurement



The WCT-120TS is an affordable, tabletop temperature-dependent silicon lifetime and wafer metrology system.

Wafer measurement instrument offering calibrated analysis of temperature-dependent carrier-recombination lifetime.

Product Overview

The WCT-120TS Temperature Stage instrument showcases the unique measurement and analysis techniques found with our WCT-120 instrument with the added capability to measure the carrier recombination lifetime of silicon wafers at temperatures ranging from 25°C to 200°C. Both the Quasi-Steady-State Photoconductance (QSSPC) lifetime measurement method developed by Sinton Instruments as well as the transient photoconductance technique can be used to measure wafer lifetime.

System Capabilities

Primary application:

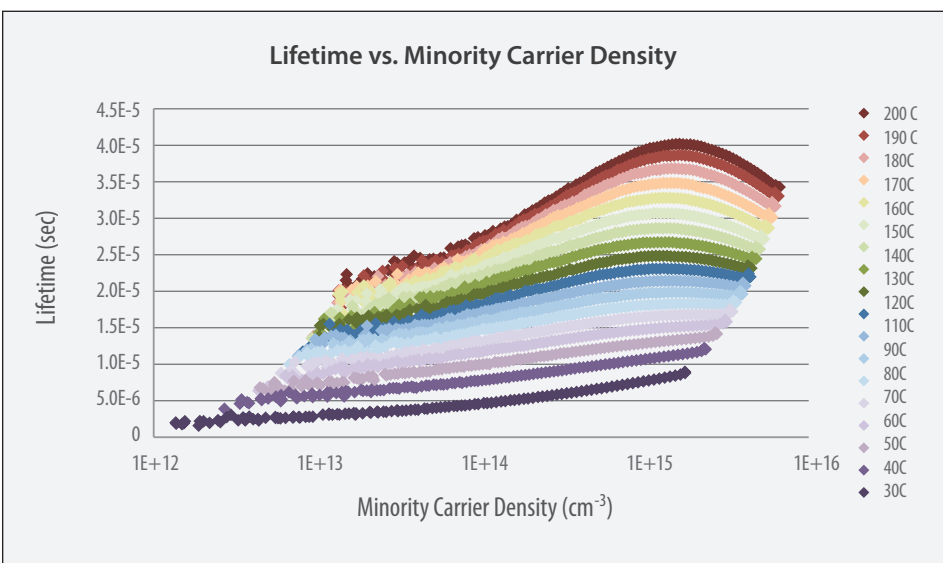
- Measuring carrier recombination lifetime in silicon wafers at a range of temperatures

Other applications:

- Monitoring initial material quality
- Detecting heavy metals contamination during wafer processing
- Evaluating surface passivation and emitter dopant diffusion

Key Features

- Single-click identification of key characteristics of silicon wafers including sheet resistance, lifetime, and trap density at a range of temperatures
- Automated temperature-dependent measurements



Example temperature and injection-dependent lifetime results available from the WCT-120TS.

WCT-120TS Specifications

Instrument Specifications

Available measurements at stage temperatures of 25°C – 200°C

- 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

- 30 mm

Sample size, standard configuration

- Standard diameter: 60–150 mm

Wafer thickness range

- 10–2000 μ m (calibrated)

Warranty

- One-year limited warranty on all parts and software



Facility Requirements

Ambient operating temperature

- 20°C–25°C

Power requirements

- Instrument: 40 W
- Computer with monitor: 200 W
- Light source: 60 W
- Heaters: 70 W

Dimensions

- Instrument: 22.5 x 28 x 57 cm (L x W x H)
- Temperature control box: 18 x 15 x 7.5 cm (L x W x H)

Universal mains voltage

- 100–240 VAC 50/60 Hz

Special facilities requirements

None



WCT-120TS temperature control box.

WCT-120TS System Components

- WCT-120TS instrument, signal processing unit, signal cables
- Temperature control box
- 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

Purchasing Information

For a quote, please contact quotes@sintoninstruments.com

We are happy to accommodate custom requirements. Please ask us for 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