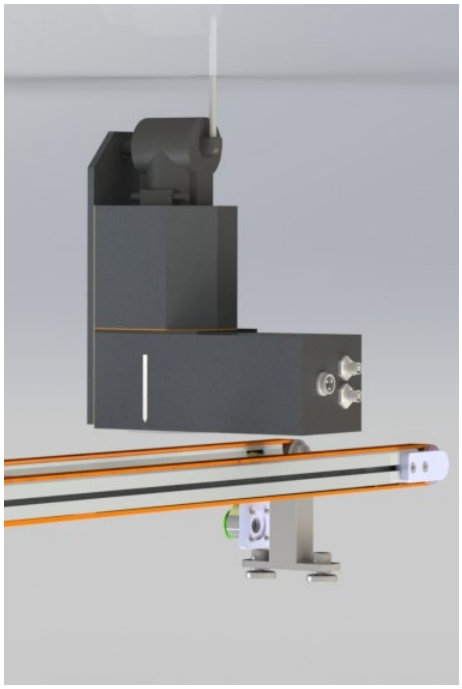
Sinton instruments

Product Note

IL800: Inline Wafer Lifetime Tester



The IL800 is an affordable, inline silicon lifetime and wafer metrology system. It is designed to be mounted above the automation belt to provide contactless wafer characterization.

Fast, inline carrier recombination lifetime testing with no compromises. Obtain the same results as the offline WCT-120 in the production line.

Product Overview

The calibrated measurements available on the WCT-120 offline lifetime tester can be applied to inline, production samples with measurements at 3600 uph.

The IL800 offers a contactless, large area measurement of wafer lifetime using our unique measurement and analysis techniques. This tool is ideal for process control and optimization in the wafer production line. By utilizing these techniques, manufacturers can ensure high-quality production and improved efficiency.

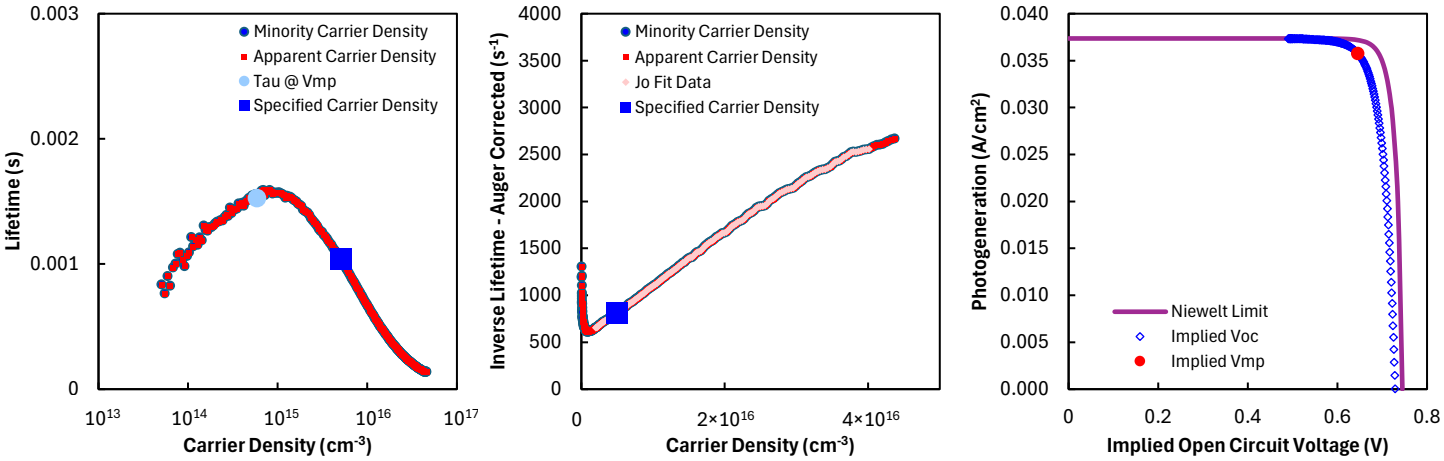
The lifetime measurement also provides the implied open-circuit voltage versus illumination curve. This curve serves as an upper limit for the sample, offering valuable insights into the material's potential performance.

System Capabilities

- Measure universally accepted calibrated carrier recombination lifetime versus injection level
- Monitor and optimize the production process
- Monitor initial material quality
- Detect wafer contamination during processing
- Maintain optimal surface passivation quality from the nitride deposition

Available Measurements

- Carrier recombination lifetime (τ_{eff})
- Sheet resistance and resistivity
- Emitter saturation current density (J_{0e})
- Bulk Lifetime
- Implied I-V



Example graphical result data from the IL800 instrument includes calibrated injection dependent effective lifetime (left) used to determine the effective lifetime at a specified carrier density and at the implied V_{mp}, Auger-corrected inverse lifetime (center) used to determine the emitter saturation current density (J_{0e}) and bulk lifetime, and implied I-V (right) used to determine the 1-sun implied V_{oc}, implied V_{mp}, and implied FF.

Instrument Specifications

Available Measurements
- Lifetime (τ_{eff}, τ_{bulk}, $\tau_{@Vmp}$)
- Sheet resistance and resistivity
- Emitter Saturation Current Density (J_{0e})
- Trap Density
- Implied I-V (1-sun V_{oc}, implied FF)

Lifetime Measurement Range
- 100ns to greater than 10ms

Resistivity Measurement Range
- 3-600 Ω/sq

Available Illumination Range
- 0-100 suns

Typical Calibration Injection Range
- 10^{13} to 10^{16} cm^{-3}

Measurement and Analysis Modes
- QSSPC
- Transient-PCD
- Generalized

Available Spectrum
- White light and IR Illumination

Sensor Area/ Sample Size
- 80 mm diameter sensor to measure 80 to 230mm wafers

Wafer Thickness Range
- 10 to 2000 µm

Throughput
- 3600 uph (with a 250 ms test time)

Automation
- TCP Communication (standard)

Warranty
- One-year limited warranty on all parts and software

Standards
- Complies with SEMI Standard PV13

CE

Facility Requirements

Ambient Operating Temperature
- 20°C to 25°C

Power Requirements
- IL800: 40 W
- Computer and Monitor: 200 W
- Flash Power Supply: 60 W

Space Requirements (L x W x H)
- IL800: 20 x 9 x 28.8 cm
- Peripheral equipment can be placed out of the way of the production line

Universal Mains Voltage
- 100 – 240 VAC 50/60 Hz

Special Facility Requirements
- None

System Components

- IL800 Instrument
- Signal Connector Box
- FPS-300IL flash power supply
- Remote flash head and flash bulb
- Bandpass filter
- Signal cables
- Windows PC with installed, configured software
- Monitor, keyboard, and mouse
- High-resolution, high-speed data acquisition
- Sinton Instruments Lifetime software package

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

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