LED Total Power Test System

Model 58173-T

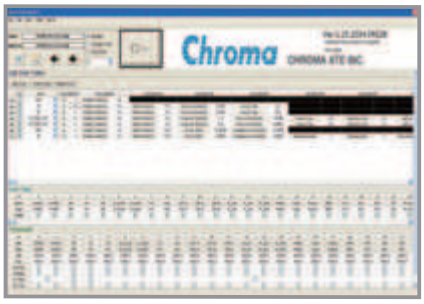
58173-T LED Test System focuses on LED Wafer/Chip Characteristics Analysis and provides optimized test performance. Its test items include a variety of voltage/current output measurement, optical power measurement, and spectrum analysis. On measurement, several electrical and optical characteristics analysis can be achieved at a time within 25 ms, and its electrical measurement supports high-voltage LED and high-brightness LED applications.

On system integration, 58173-T can easily integrate various Probers and Handlers for wafer probing and chip sorting. In addition, optional Switch Module allows Test System to perform multi-channel and multi-chip measurements.

Key Features

- ☑ High test speed: complete whole test within 25ms (selected test items)
- ☑ Super statble of temperature variation
- ☑ Support high voltage and high power LED test requirement
- ☑ Support multi-die test (option)
- ☑ Support ESD test (option)

Real-Time Production Information



Flexible Editable Test Parameters

Powerful Report File Editing

SPECIFICATIONS		
Model		**58173-T**
Parameters		
Electiral Test Items		Forward Voltage(Vf), Reverse Leakage Current (Ir), Reverse Breakdown Voltage (Vrb), SCR
Optical Test Items		Luminous Intensity (mcd), Lumen (lm), Radiant power (mw), Dominant Wavelength (Wd), Peak Wavelength (Wp), FWHM, CIE Chromaticity, CCT, CRI
Electrical Parameter Measurements		
Power Range		≦ 20W, as figure 1 shows
Voltage	Source Range	±10V / ±100V / ±200V
	Source Accuracy	0.05% + 0.03%F.S. / 0.05% + 0.03%F.S. / 0.05% + 0.03%F.S. *1
	Measurement Range	±10V / ±100V / ±200V
	Measurement Accuracy	0.03% + 0.02%F.S. / 0.03% + 0.02%F.S. /0.03% + 0.02%F.S. *1
Current	Source Range	±20uA / ±500uA / ±20mA / ±500mA / ±2°
	Source Accuracy	0.08% + 0.06%F.S. / 0.08% + 0.05%F.S. / 0.08% + 0.05%F.S. / 0.3% + 0.1%F.S. / 0.3% + 0.3%F.S *1
	Measurement Range	±20uA / ±500uA / ±20mA / ±500mA / ±2°
	Measurement Accuracy	0.06% + 0.04%F.S. / 0.06% + 0.03%F.S. / 0.06% + 0.03%F.S. / 0.25% + 0.1%F.S. / 0.25% + 0.3%F.S. *1
Optical Measurements		
Spectrometer	Wavelength Rang	350 ~ 780 nm
	Detector Pixels	2048 pixels
	Pixel Resolution	0.318 nm
	Optical Resolution	2.067 nm (FWHM)
CIExy	Repeatability	±0.0015
Wp	Repeatability	±0.5 nm
Wd (380~780nm)	Repeatability	±0.2 nm
Radiant Flux (mW)	Repeatability	±1%
Operation Environment	Temperature	20° ~ 30°
	Humidity	40% ~ 70%
Facility Requirements		
Power Requirement		800 VA
Dimensions (W x D x H)		58221: 486 mm x 462 mm x 110 mm 58241: 486 mm x 475 mm x 110 mm IPC: 426 mm x 451 mm x 177 mm
Weight		35kg

Note *1: Test condition is under point of sensing

LED Flip Chip Total Power Test System

Model 58173-FC

Chroma 58173-FC is specifically designed for flip-chip LED, in which the probing surface is opposite to the light emitting surface, thus having a no-interference optical path while still having stable probing is the key factor to make an accurate measurement.

The 58173-FC's transparent chuck design (figure 1) features in no vacuum holes within the testing area, ensuring no interference along the optical path for all chips, and providing a solid stage for probing, thus it makes the measurement much more accurate.

The 58173-FC also applies Chroma's innovative total power measurement method (figure2), which collects more LED partial flux than the conventional probers, and that also improves the speed and accuracy significantly. Benefited from Chroma's innovative unique optical and mechanical design, most of the LED output radiant flux are received by a wide photo detector. Other optical parameters, such as dominant wavelength, peak wavelength, CCT, etc. are measured by Chroma's spectrometer.

In addition, Chroma58173-FC is equipped with a wide-range electrical source and meter, so that Chroma 58173-FC not only fits your requirements today, but also foresees and provides the solution for your next generation requirements.

Key Features

- ☑ Unique vacuum-hole-free chuck design
- ☑ Wide LED electrical test range (200V/2A)
- ☑ Support LED SCR characteristic detect function
- ☑ Chroma Huge Photo Detector (Measurement Angle=148°)
- ☑ Unique edge sensor design to provide stable probing
- ☑ Robust chip position scanning algorithm, suitable for various DUT forms
- ☑ Light shield design to block other light interference
- ☑ Comprehensive analysis tool and statistic report for mass production

Hardwares

- ☑ Semi-automatic prober for flip-chip LED
- ☑ Electrical test module
- ☑ Optical test module
- ☑ Optional ESD test module

Test items

- ☑ Electrical parameters: forward voltage, reverse breakdown voltage, reverse leakage current, etc.
- ☑ SCR characteristic detection
- ☑ Total optical power, total flux
- ☑ Wavelength related: dominant wavelength, peak wavelength, FWHM, etc.

No vacuum hole design in transparent chuck

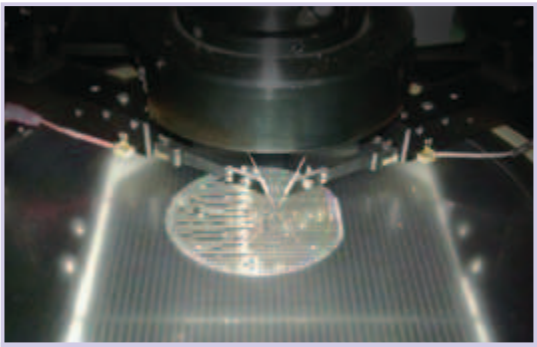


Figure 1 - Chuck with no vacuum holes that makes the measurement more accurate.

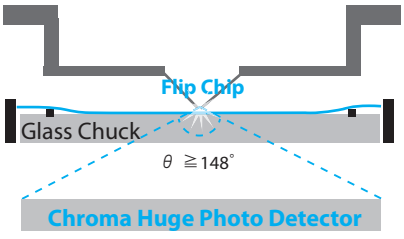
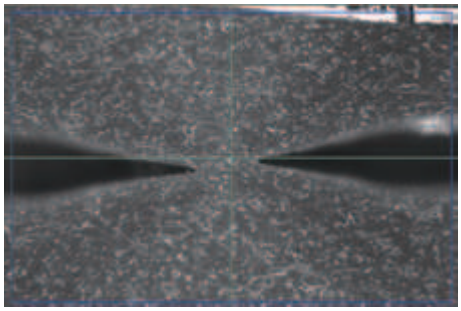
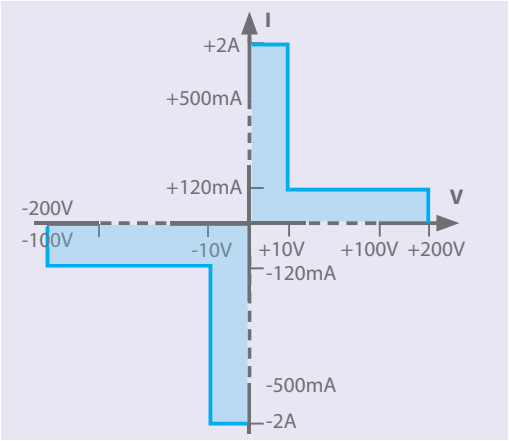


Figure 2 - Chroma's Innovative Method of LED Flip Chip Total Flux Measurement by Huge Photo Detector

Powerful Scanning Algorithm



User-friendly on screen pin adjustment



Wide voltage/current test range

SPECIFICATIONS		
Model		**58173-FC**
Application		
Die Size		7~120mil
Pad Size		≧70 μm
Ring Size		5.3 inch For Extended Ring / 7.3 inch For Extended Ring
Maximum Optical Receiving Angle		144° *1
Electrical Parameter Measurements		
PowerRange		≦ 20W, as figure shows
Voltage	Range	10V / 100V / 200V
	Source Accuracy	0.05% + 0.03%F.S / 0.05% + 0.03%F.S / 0.05% + 0.03%F.S *2
	Measure Accuracy	0.03% + 0.02%F.S / 0.03% + 0.02%F.S / 0.03% + 0.02%F.S *2
Current	Range	20 μA / 500 μA / 20mA / 500mA / 2A
	Source Accuracy	0.08% + 0.06%F.S / 0.08% + 0.05%F.S / 0.08% + 0.05%F.S / 0.3% + 0.1%F.S / 0.3% + 0.3%F.S *2
	Measure Accuracy	0.06% + 0.04%F.S / 0.06% + 0.03%F.S / 0.06% + 0.03%F.S / 0.3% + 0.1%F.S / 0.3% + 0.3%F.S *2
SCR Test Function		Yes
Wavelength / Color Measurements		
Spectrometer	Detector Type	2048 Pixels
	Wavelength range	380~780nm
	Pixel Resolution	0.32 nm
Radiant Flux repeatability (mW)	Range	3W Max.
	Repeatability	±3%
Wp	Repeatability	±1 nm
Wd	Repeatability	±0.3 nm
Operation Environment	Temperature	20° ~ 30°
	Humidity	40% ~ 70%
Mechanical Specifications		
Glass Chuck Size		5.3 inch For Extended Ring / 7.3 inch For Extended Ring
Scan CCD		Resolution 1024X768 Pixel
θ axis		±15°
Dimension		970 (L) × 970 (W) × 2250 (H) mm
Weight		580 kg
Power Input		220V

Note *1 : LED dies distribution diameter after extention has to be smaller than 5"

Note *2 : Test condition is under point of sensing

LED Total Power Test System

Model 58173

Chroma 58173 comes with an unique design and a whole new method for LED total power measurement. In bare wafer/chip LED test production, due to the existence of probing mechanism, total flux is derived from partial flux measurement in LED epitaxy industry (Figure 1). However, the conventional method encounters problems and issues in measurement accuracy, S/N ratio, measurement speed, etc. All of these are serious concerns in production line.

Chroma has developed a high speed and high accuracy measurement method for LED total power/flux (Figure 2). This innovative test method may collect most of the optical power emitted from LED, much more than the conventional one. Thus applying this test method may improve the measurement accuracy dramatically and significantly. Benefited from Chroma's innovative unique optical and mechanical design, most of the LED output radiant flux are received by a wide photo detector. Other optical parameters, such as dominant wavelength, peak wavelength, CCT, etc. are measured by Chroma's spectrometer.

In addition, the 58173 is equipped with a wide-range electrical source and meter, so that the 58173 not only fits your requirements today, but also foresees and provides the solution for next generation requirements.

Key Features

- ☑ Wide LED electrical test range (200V/2A)
- ☑ Support LED SCR characteristic detect function
- ☑ Chroma Huge Photo Detector (Measurement Angle=144°)
- ☑ Unique edge sensor design to provide stable probing
- ☑ Robust chip position scanning algorithm, suitable for various DUT forms
- ☑ Light shield design to block other light interference
- ☑ Comprehensive analysis tool and statistic report for mass production

Hardwares

- ☑ Semi-automatic LED wafer/chips prober
- ☑ Electrical test module
- ☑ Optical test module
- ☑ Optional ESD test module

Test items

- ☑ Electrical parameters : forward voltage, reverse breakdown voltage, reverse leakage current, etc.
- ☑ SCR characteristic detection
- ☑ Total optical power, total flux
- ☑ Wavelength related : dominant wavelength, peak wavelength, FWHM, etc.

Optional Optical Modules

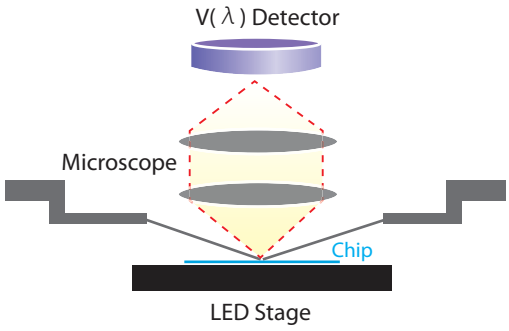


Figure 2 - Conventional Method of LED Wafer/chip Total Flux Measurement by Microscope Module

Standard Optical Module

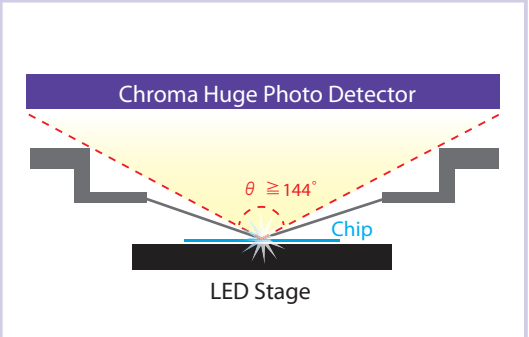


Figure 1 - Chroma's Innovative Method of LED Total Flux Measurement by Huge Photo Detector

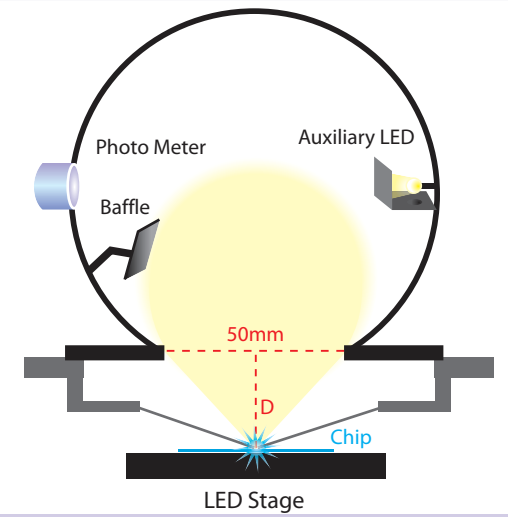


Figure 3 - Conventional Method of LED Wafer/chip Total Flux Measurement by Integrating Sphere