TRA-300 LED热结构分析测试系统
TRA-300 LED Thermal Structure Analysis and Test System

- 于LED封装产品的热阻、结温及分层热阻结构的精密分析;
- 采用TRA专用软件进行结构函数分析，可以获得LED精细的热阻结构（从芯片至各封装结构的热阻值），从而客观评价LED封装产品的散热质量和热管理水平，为LED的散热设计提供最好的验证。
  Used for precise analysis of thermal resistance, junction temperature and layered thermal resistance structure of LED packaging products;
  Using TRA special software to analyze the structure function, we can obtain the fine thermal resistance structure of LED (thermal resistance value from the chip to each packaging structure), so as to objectively evaluate the heat dissipation quality and thermal management level of LED packaging products, and provide the best verification for the heat dissipation design of LED.

主要参考标准

- EIA/JESD 51-1~14 Integrated Circuits Thermal Measurement Method
- MIL-STD-750D Test Method for semiconductor Device
- SJ 20788-2000 半导体二极管热阻测试方法
- GB/T 4023-1997 半导体器件分立器件和集成电流第二部分：整流二极管
- QB/T 4057-2010 普通照明用发光二极管性能要求

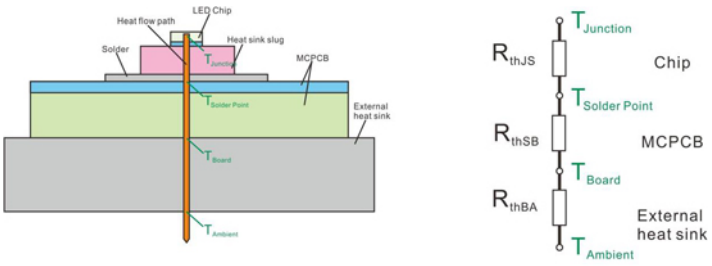
技术参数 Specifications

● LED的结温和热阻

LED热阻是热流路径导热特性的主要衡量指标，热阻结构是指被测器件热流路径上的热阻分布，如图所示的LED器件，其传递总热阻一般由三部分构成：芯片到金属基板的热阻+金属基板到冷却系统的热阻+冷却系统到周围环境的热阻。

Junction temperature and thermal resistance of LED

LED thermal resistance is the main indicator of the thermal conductivity of the heat flow path. The thermal resistance structure refers to the thermal resistance distribution on the heat flow path of the device under test, as shown in the figure. The total thermal resistance of the LED device is generally composed of three parts: the thermal resistance from the chip to the metal substrate+the thermal resistance from the metal substrate to the cooling system+the thermal resistance from the cooling system to the surrounding environment.



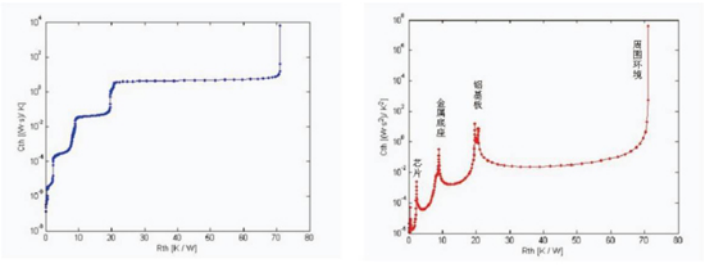
LED封装的热流路径和热阻结构示意

● LED热阻结构分析

TRA300配置的分析软件自动转化升温或降温曲线数据，得到LED的瞬态热阻曲线，并通过建立有限元模型，得到积分及微分热结构函数，微分结构函数上的各尖峰所对应的横坐标即为热流路径上各部件至PN结的热阻值。利用TRA300进行结构函数的分析可以获得LED精细的热阻结构，从而客观评价LED器件的散热质量和热管理水平，为LED的散热设计提供最好的验证。

Analysis of LED thermal resistance structure

The analysis software configured by TRA300 automatically converts the temperature rise or drop curve data to obtain the transient thermal resistance curve of the LED. Through the establishment of the finite element model, the integral and differential thermal structure functions are obtained. The abscissa corresponding to each peak on the differential structure function is the thermal resistance value from each component on the heat flow path to the PN junction. Using TRA300 to analyze the structure function, we can obtain the fine thermal resistance structure of LED, so as to objectively evaluate the heat dissipation quality and thermal management level of LED devices, and provide the best verification for the heat dissipation design of LED.



LED分层热阻结构分析

技术参数 Specifications

- 可测量参数
  Measurable parameters
- 热阻RθJX(℃/W)、热阻结构分析、结温TJ(℃)；
  Thermal resistance R θ JX (℃/W), thermal resistance structure analysis, junction temperature TJ (℃);
- 测量不同电流下的结温电压K系数曲线；
  Measuring junction temperature voltage K coefficient curve under different currents;
- 可绘制LED电流-电压特性曲线、升温和降温特性曲线等；
  Can draw LED current voltage characteristic curve, heating and cooling characteristic curve, etc;
- 正向电流IF（A），正向电压VF（V），光谱辐射功率(W)等；
  Forward current IF (A), forward voltage VF (V), spectral radiation power (W), etc;