

论文

大功率发光二极管可靠性和寿命评价试验方法

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摘要:

介绍了发光二极管(LED)的发展简史。提出可能影响LED可靠性的几种因素,主要有封装中的散热问题和LED本身材料缺陷。对于LED可靠性,主要方法是通过测试其寿命来分析其可靠性,一般采取加速实验的方法来测试推导LED寿命。介绍了根据加速应力(主要分为单一加速应力和复合加速应力2种)评价LED寿命的测试方法。在不同加速试验应力条件下测试了大功率LED可靠性,并建立了LED寿命的几种数学模型。最后根据具体实例,通过选择加速应力和试验方法,给出具体推导LED寿命的数学公式。

关键词: 发光二极管 寿命评价试验方法 加速应力 数学模型

Test method of life-time and reliability evaluation for high-power LED

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Abstract:

The development history of the light-emitting diode (LED) is introduced. Several factors influencing LED reliability are put forward, among which the material defectiveness of LED and the heat dissipation during packaging are the main factors. The reliability evaluation of LED is analyzed by testing the LED lifetime, which is usually derived from the accelerated test. The testing methods to evaluate LED lifetime according to the accelerated stress (single and composite accelerated stresses) are listed and introduced. The reliability of high-power LEDs was tested and several mathematical models of the LED lifetime were derived under different accelerated stresses. The mathematical formula for deriving the LED lifetime is given based on some examples.

Keywords: light-emitting diode (LED) testing method of lifetime evaluation accelerated stress mathematical model

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1. 张鸣杰;王蔚生;徐佳;邱崧.利用补色提高白光LED显色指数方法的研究[J].应用光学,2008,29(supp):148-151
2. 吴宝宁;李宏光;俞兵;曹锋;邝自力.LED光学参数测试方法研究[J].应用光学,2007,28(4):513-516
3. 赵楚军;李宏建;崔昊杨;何英旋;彭景翠.电场对单层有机电致发光二极管复合发光的影响[J].应用光学,2005,26(2):47-50
4. 张东玲;贺锋涛;冯晓强;侯洵.高分辨率蓝光光学显微测量系统[J].应用光学,2005,26(3):57-59
5. 臧金浩;侯瑶;吴朝新.单顶角结构LED背光模组的设计与优化[J].应用光学,2008,29(6):954-956

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