

ICS 31.180
CCS L 30



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 46892-2025

**Test method for thermal conductivity of electronic circuit
boards for high-brightness LEDs**

高亮度LED用印制板热导率测试方法

(English Translation)

Issued on: December 31, 2025

Implemented on: July 1, 2026

Issued by: State Administration for Market Regulation

Table of Contents

Preface
1 Scope
2 Normative References
3 Terms and Definitions
4 Sample Preparation
5 Pretreatment
6 Test Method
6.1 General Provisions
6.2 Testing of heat transfer parameters
Appendix A (Informative) A list of structural numbering comparisons and a list of technical differences and their causes. (9)
Appendix B (Informative) Printed Circuit Board Classification and Grading
Appendix C (Normative) Balance Verification
Reference

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is modified to adopt IEC 61189-3-913:2016 "Electrical materials, printed circuit boards and other interconnection structures and assemblies - Test methods".

Part 3-913. Test method for thermal conductivity of printed circuit boards for high-brightness LEDs.

Compared with IEC 61189-3-913:2016, this document has undergone many structural adjustments. A comparison of the structural numbering changes between the two documents is provided.

See Appendix A for a list.

This document differs significantly from IEC 61189-3-913:2016 in several technical aspects, which are indicated in the margins of the relevant clauses.

The differences are indicated by a vertical line (|). A summary of these differences and their causes can be found in Appendix A.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the Ministry of Industry and Information Technology of the People's Republic of China.

This document is under the jurisdiction of the National Printed Circuit Standardization Technical Committee (SAC/TC47).

1 Scope

This document describes the testing of surface thermal transfer coefficient and vertical thermal conductivity of printed circuit boards (hereinafter referred to as "PCBs") for high-brightness LEDs.

method.

This document applies to printed circuit boards used in high-brightness LEDs.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 2036 Printed Circuit Terminology (GB/T 2036-1994, IEC 60194:1988, NEQ)

3 Terms and Definitions

The terms and definitions defined in GB/T 2036, as well as the following terms and definitions, apply to this document.

Under specified test conditions, the ratio of heat flow rate over the average area of the sample to the temperature difference with the environment.

Note: The standard SI unit for surface heat transfer coefficient is watts per square meter ($W/(m^2 \cdot K)$).

[Source. GB/T 2900.93-2015, 2.4113-04-40, with modifications] 3.2 Under specified test conditions, the ratio of heat flow rate over the chip area to the temperature gradient along the thickness direction of the sample.

Note: The standard SI unit for vertical thermal conductivity is watts per meter K [$W/(m \cdot K)$].

4 Sample Preparation

Prepare samples using one of the following methods. During preparation, ensure the sample surface is free from oil, sweat, or other contaminants. The sample quantity should be specified in the procurement documents.

If not specified, the sample size should be ≥ 3 .

a) Standard Test Pattern Method. The test specimen is prepared using the standard test pattern given in Figure 2. The materials and manufacturing process should correspond to the printed pattern it represents.

The boards are the same.

b) Special Design Graphic Method. Samples are drawn from actual printed circuit board products in use. When specified in the procurement documents, samples should be drawn accordingly.

The samples are cut into the specified shapes and dimensions. If a specially designed test specimen is available, it should be used.

This refers to the test specimen. All specimens in this method should contain or meet the test pattern shown in Figure 2; other designs can be customized as needed.

Row selection.