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

GB/T 15651.13-2026

**Semiconductor devices - Part 5-13: Optoelectronic devices -
Hydrogen sulphide corrosion test for LED packages**

半导体器件 第5-13部分：光电子器件 LED封装的硫化氢腐蚀试验

(English Translation)

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Table of Contents

Preface

Introduction

1 Scope

2 Normative References

3 Terms and Definitions

4 Test apparatus

4.1 General Rules

4.2 Test Fixture

4.3 Test Setup

5 Test gas

6 Pretreatment

6.1 Overview

6.2 Moisture Absorption Treatment

7 Test Methods

7.1 Initial Detection

7.2 Test Procedure

7.3 Final Inspection

8 Specific details

Appendix A (Informative) Predicting the Attenuation of Luminous and Radiative Flux under Specific Conditions

A.1 Correspondence between hydrogen sulfide corrosion test and indoor corrosion categories

A.2 Correlation between the corrosion test results and the corrosion in the field environment (example)

Appendix B (Informative) Test Method for Increased Sample Mass in Silver Testing

B.1 Purpose

B.2 Method

B.3 Silver test sample

B.4 How to place the silver test sample

Appendix C (Informative) Silver Test Samples for Corrosion Monitoring

C.1 Test Sample

C.2 Preparation

Appendix D (Informative) Gas Concentration Settings in the Test Environment

D.1 Overview

D.2 The reason why there are no specified ranges for the concentrations of various gases

D.3 Application in practical experiments

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 Part 5-13 of GB/T 15651. GB/T 15651 has already published the following parts.

---Semiconductor Devices. Discrete Devices and Integrated Circuits - Part 5: Optoelectronic Devices (GB/T 15651-1995);

---Semiconductor Discrete Devices and Integrated Circuits Part 5-2. Basic Ratings and Characteristics of Optoelectronic Devices (GB/T 15651.2-2003);

---Semiconductor discrete devices and integrated circuits Part 5-3. Test methods for optoelectronic devices (GB/T 15651.3-2003);

---Semiconductor Devices - Discrete Devices - Part 5-4. Optoelectronic Devices - Semiconductor Lasers (GB/T 15651.4-2017);

---Semiconductor Devices Part 5-5. Optoelectronic Devices - Optocouplers (GB/T 15651.5-2024);

---Semiconductor Devices Part 5-6. Optoelectronic Devices - Light Emitting Diodes (GB/T 15651.6-2023);

---Semiconductor Devices Part 5-7. Optoelectronic Devices - Photodiodes and Phototransistors (GB/T 15651.7-2024);

---Semiconductor Devices Part 5-13. Hydrogen sulfide corrosion test for LED packages used in optoelectronic devices (GB/T 15651.13-(2026)).

This document is equivalent to IEC 60747-5-13:2021 "Semiconductor devices - Part 5-13. Sulfation of LED packages for optoelectronic devices".

Hydrogen corrosion test.

The following minimal editorial changes have been made to this document.

---The concentration unit "ppm" has been changed to "10⁻⁶ vol/vol" throughout the text.

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 and is under the jurisdiction of the Ministry of Industry and Information Technology of the People's Republic of China.

Introduction

GB/T 15651 is a series of standards for semiconductor optoelectronic devices, which mainly specifies the general requirements, basic ratings, and...

Characteristics, testing methods, and technical requirements for devices such as semiconductor lasers, optocouplers, light-emitting diodes, photodiodes, and phototransistors.

The quality assurance regulations and other related content are proposed to consist of the following 13 parts.

---Part 5: Optoelectronic Devices. The purpose is to present semiconductor photoelectron emitting devices, semiconductor photosensitive components, and their internal workings.

Standards for semiconductor devices and their classification based on their mechanisms and optical radiation.

---Part 5-2. Basic Ratings and Characteristics of Optoelectronic Devices. The purpose is to provide basic ratings and characteristics for semiconductor photoelectric emitting devices and semiconductors.

Photodetectors, semiconductor photosensitive devices, semiconductor devices that emit light internally, and base devices classified as optoelectronic devices these ratings and characteristics are applicable only to fiber optic systems or subsystems.

---Part 5-3. Test Methods for Optoelectronic Devices. The purpose is to provide test methods for optoelectronic devices used in fiber optic systems or...

Except for subsystems.

---Part 5-4. Optoelectronic Devices - Semiconductor Lasers. The purpose is to provide the basic ratings, characteristics, and...

Test method.

---Part 5-5. Optoelectronic Devices - Optocouplers. The purpose is to provide the terminology, basic ratings, and characteristics of optocouplers.

Safety testing and measurement methods.

---Part 5-6. Optoelectronic Devices - Light Emitting Diodes (LEDs). The purpose is to

provide the terminology, ratings, characteristics, and measurement methods for light-emitting diodes.

Test methods and quality assessment methods.

---Parts 5-7. Optoelectronic Devices - Photodiodes and Phototransistors. The aim is to present photodiodes and phototransistors...

The terminology, basic ratings and characteristics of the device, as well as the measurement methods.

---Parts 5-8. Test Methods for the Photoelectric Efficiency of Light Emitting Diodes (LEDs). The purpose is to provide experimental methods for evaluating the photoelectric efficiency of LEDs.

Photoelectric efficiency test method.

---Parts 5-9. Methods for measuring the internal quantum efficiency of light-emitting diodes based on temperature-dependent electroluminescence in optoelectronic devices.

The purpose is to provide a method for testing the internal quantum efficiency of light-emitting diodes.

---Parts 5-10. Methods for measuring the internal quantum efficiency of light-emitting diodes (LEDs) based on room temperature references. The aim is to provide...

A room-temperature-based method for testing the internal quantum efficiency of light-emitting diodes (LEDs) is proposed.

---Part 5-11. Test methods for radiative and non-radiative currents of optoelectronic devices, light-emitting diodes (LEDs). The aim is to provide methods for measuring the radiative and non-radiative currents of light-emitting diodes (LEDs).

Methods for testing the radiated and non-radiated currents of diodes.

---Part 5-12. Test Methods for the Efficiency of Light Emitting Diodes (LEDs) in Optoelectronic Devices. The purpose is to provide methods for measuring LED efficiency.

Test method.

---Part 5-13. Hydrogen sulfide corrosion test of LED packages for optoelectronic devices. The purpose is to provide information on hydrogen sulfide corrosion of LED packages.

Corrosion test.

Semiconductor Devices Parts 5-13. Optoelectronic Devices Hydrogen sulfide corrosion test of LED packaging