

ICS 77.040
CCS H 21



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

GB/T 30868-2025

Replacing GB/T 30868-2014

**Test method for micropipe density of monocrystalline silicon
carbide**

碳化硅单晶片微管密度测试方法

Issued on: August 1, 2025

Implemented on: February 1, 2026

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document replaces GB/T 30868-2014 "Determination of microtube density in silicon carbide single crystals - Chemical etching method" and GB/T 31351-2014 Nondestructive Testing Method for Micropipe Density of Silicon Carbide Single Crystal Polished Wafers. This document is based on GB/T 30868-2014 and integrates GB/T 31351- 2014 Compared with GB/T 30868-2014, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- a) The scope has been changed (see Chapter 1, Chapter 1 of GB/T 30868-2014);
- b) The environmental requirements have been changed (see Chapter 4, Chapter 8 of GB/T 30868-2014);
- c) Added interference factors (see 5.2, 6.2);
- d) The instrument has been changed (see 5.4, Chapter 6 of GB/T 30868-2014);
- e) Micropipe corrosion has been modified (see 5.5.2, 7.2 of GB/T 30868-2014);
- f) The precision has been changed (see 5.8, Chapter 11 of GB/T 30868-2014).

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document was jointly issued by the National Technical Committee on Semiconductor

Equipment and Materials Standardization (SAC/TC203) and the National Technical Committee on Semiconductor Equipment and Materials Standardization (SAC/TC203).

It is jointly proposed and coordinated by the Materials Technical Committee of the Chemical Engineering Technical Committee (SAC/TC203/SC2).

This document was drafted by: China Electronics Technology Group Corporation No. 46 Research Institute, Beijing Tianke Heda Semiconductor Co., Ltd., Shandong Tianyue Advanced Technology Co., Ltd., Guangdong Tianyu Semiconductor Co., Ltd., Nonferrous Metals Technology and Economic Research Institute Co., Ltd.

Company, Anhui Changfei Advanced Semiconductor Co., Ltd., Zhejiang Jingrui Electronic Materials Co., Ltd., Nanjing Shengxin Semiconductor Materials Co., Ltd., Huzhou Dongni Semiconductor Technology Co., Ltd., Changfei Optical Fiber and Cable Co., Ltd., Zhejiang Caizi Technology Co., Ltd., Lianke Semiconductor Co., Ltd.

Company, China Electronics Jinghua (Tianjin) Semiconductor Materials Co., Ltd., Shanghai Youruipu Semiconductor Equipment Co., Ltd., Henan Zhongyi Chuangxin Development Co., Ltd.

Company, Harbin Keyou Semiconductor Industry Equipment and Technology Research Institute Co., Ltd., Ningbo Hesheng New Materials Co., Ltd., Xiamen Zhongxin Jingyan Semiconductor CONDUCTOR LIMITED.

The main drafters of this document are: Yao Kang, Xu Rong, She Zongjing, He Xuankun, Wang Yingming, Zhang Hongyan, Qi Fei, Ding Xiongjie, Li Suqing, Liu Xiaoping, Ouyang Penggen, Pan Wenbin, Yan Yang, Wang Zhiyong, Wang Minghua, Hu Runguang, Li Mingda, Zhang Chaoyue, Sun Yi, Zhao Lili, Zhao Xintian, and Chen Jisheng.

This document was first published in 2014. This is the first revision. The revision incorporates GB/T 31351-2014 "Silicon Carbide Single Crystal Polishing" The content of "Non-destructive detection method of micropipe density on optical sheet".

1 Scope

This document describes the test method for the micropipe density of silicon carbide single wafers, including chemical etching and polarized light methods.

This document is applicable to the test of micropipe density of silicon carbide single wafers.

2 Normative references

GB/T 14264

GB/T 43612

3 Terms and Definitions

The terms and definitions defined in GB/T 14264 apply to this document.

3.1

A thin slice with parallel planes cut from a silicon carbide single crystal.

Note. Including cutting discs, grinding discs, polishing discs, etc.

4 Environmental Requirements

4.1 Temperature. $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$.

4.2 Relative humidity. 20%~75%.

5.1 Principle

The micro-pipe defects are revealed by selective chemical etching technology, which makes them present hexagonal structure and have a certain depth of corrosion pits.

Observe the microtubes on the surface of silicon carbide single crystal by microscope or other instruments (such as scanning electron microscope), calculate the number of microtubes per unit area, and get the microtube number. Tube density.

5.2 Interference Factors

5.2.1 The heating time of the corrosive liquid is too short, and the corrosive liquid cannot be completely melted, which affects the corrosion effect.

5.2.2 If the corrosion temperature is too high or the corrosion time is too long, the reactants will easily adhere to the surface of the sample and affect the observation of microtubes.

5.2.3 During corrosion, the placement of the sample also has a certain impact on the observation of the results. If the test surface is facing downward, it may be due to the contact with the bottom of the crucible.

Contact causes uneven corrosion, affecting the observation of microtubes.