

ICS 77.040
CCS H17



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

GB/T 11073-2025

Replacing GB/T 11073-2007

**Test method for measuring radial resistivity variation on silicon
wafers**

硅片径向电阻率变化测量方法

Issued on: October 31, 2025

Implemented on: May 1, 2026

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

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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 replaces GB/T 11073-2007 "Method for Measurement of Radial Resistivity Change in Silicon Wafers". Compared with GB/T 11073-2007, Apart from structural adjustments and editorial changes, the main technical changes are as follows:

- a) The scope has been changed (see Chapter 1, Chapter 1 of the.2007 edition);
- b) Added terms and definitions (see Chapter 3);
- c) The methodology has been modified (see Chapter 4, Chapter 3 of the.2007 edition);
- d) The interfering factors were changed (see Chapter 5, Chapter 4 of the.2007 edition);
- e) Reagents and materials have been added (see Chapter 6)
- f) Changes were made to the instruments and equipment (see Chapter 7, Chapter 5 of the.2007 edition);
- g) Additional experimental conditions were added (see Chapter 8);
- h) The "V-groove" designation was added to the sample specifications, and thickness requirements were also increased (see
- i) The resistivity test site selection scheme has been changed (see 9.4, 6.5 in the.2007 edition);
- j) The experimental data processing was changed (see Chapter 11, Chapter 8 of the.2007 edition);
- k) The precision has been changed (see Chapter 12, Chapter 9 in the.2007 edition);

1 Scope

GB/T 11073-2025 is the Chinese national standard on test method for measuring radial resistivity variation on silicon wafers, in the field of metallurgy. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 31 October 2025 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 May 2026. Classification: ICS 77.040, CCS H17. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document describes a method for measuring the radial resistivity change of a silicon monocrystalline wafer using the straight-line four-probe method. This document applies to probes with a thickness less than the average probe spacing, a diameter greater than 15 mm, and a room temperature resistivity between $3 \times 10^{-4} \Omega \cdot \text{cm}$ and $1.8 \times 10^{-4} \Omega \cdot \text{cm}$. Radial electrical properties of p-type silicon single crystal wafers with a resistivity of $10^4 \Omega \cdot \text{cm}$ and n-type silicon single crystal wafers with a room temperature resistivity of $6 \times 10^{-3} \Omega \cdot \text{cm}$ to $1 \times 10^5 \Omega \cdot \text{cm}$ Measurement of resistivity changes. Measurements of resistivity in other ranges of silicon single-crystal wafers should be performed in accordance with this document.

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 1551-2021 Determination of resistivity of single crystal silicon using the straight-line four-probe method and the DC two-probe method

GB/T 6618 Test method for thickness and total thickness variation of silicon wafers

GB/T 12965 Silicon Single Crystal Cutting and Grinding Wafers

GB/T 14264 Semiconductor Materials Terminology

3 Terms and Definitions

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

4 Method Principles

4.1 Straight-line four-probe method Four probes arranged in a straight line are pressed vertically onto a flat sample surface that is approximately semi-infinite. When a direct current is applied from probe 1, probe 2, and probe 3, a direct current is applied to the sample surface. When needle 4 flows into the semiconductor sample, according to the principle of point source superposition, the potentials at probes 2 and 3 are generated by the current sources at probes 1 and 4. The sum of potentials, and the potential difference between probes 2 and 3, are functions of the current source intensity, sample resistivity, and probe coefficient. See the measurement schematic diagram below. Figure 1. A direct current (I) is passed through the sample between probes 1 and 4, and the potential difference (V) generated between probes 2 and 3 is measured. Based on the measurement... The resistivity is calculated using the obtained current and potential difference values according to formula (1). $\rho = 2\pi S$ (1) In the formula. ρ

- resistivity, measured in ohm-cm ($\Omega \cdot \text{cm}$); S
- Probe spacing, in centimeters (cm); V
- The measured potential difference, in millivolts (mV); I
- The measured current, in milliamperes (mA).