

ICS 29.045

CCS H82



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

GB/T 12962-2015

Replacing GB/T 12962-2005

Monocrystalline silicon

硅单晶

Issued on: December 10, 2015

Implemented on: January 1, 2017

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China;
Standardization Administration of China**

Table of Contents

- 1 Scope
- 2 Normative references
- 3 Terms and Definitions

Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules. This standard replaces GB/T 12962-2005 "monocrystalline silicon." This standard compared with GB/T 12962-2005, the main changes are as follows:

- Increased diameter less than or equal to 50.8mm Czochralski Silicon and requirements (see 5.1.1);
- Increasing the diameter of 200mm zone melting silicon single crystal and requirements (see 5.1.1);
- Added Czochralski Silicon carrier lifetime requirements (see 5.2.1);
- Revised the n-type high resistance silicon single crystal resistivity zone melting range requirements (see 5.2.1);
- Increasing the doping ratio of neutron transmutation doped silicon single crystal F5 requirements (see 5.2.1);
- Revised F10 doping ratio of neutron transmutation doping of silicon single radial change in resistivity and minority carrier lifetime requirements (See 5.2.1);
- Revised gas doping zone melting silicon single crystal diameter, resistivity and minority carrier lifetime and other requirements (see 5.2.1);
- "Metal content" requirement removed "heavy boron-doped Czochralski Silicon base, the base phosphorus content provided by both parties agreed to" content (see 5.8);
- Sampling by the text description to Table 6;
- Increased orders content (see Chapter 9). The standard equipment by the National Standardization Technical Committee and the semiconductor material (SAC/TC203) and National Semiconductor Equipment and Materials Standards Materials Branch of the Technical Committee (SAC/TC203/SC2) jointly proposed and managed. This standard was drafted. there are research new materials Co., Ltd., Tianjin Central European Semiconductor Materials Technology Co., Ltd., Zhejiang Crystal Technology Co., Ltd., Zhejiang silicon material quality inspection center, Hangzhou Haina Semiconductor Co.,

universal silicon peak Electronics Co., Ltd., Zhejiang Jiangsu Jinrui Hong Technology Co., Ltd., a Shanghai-crystal silicon Material Co., Ltd., China Nonferrous Metals Industry Standards and Metrology Quality Research Institute, Guangdong Taizhuo Optoelectronics Technology Co., Ltd. The main drafters of this standard. Sun Yan, Zhang Guo Hu, Zhang Xue Nan, Huang Xiaorong, Chunlan floor, Wangfei Yao, Zhu Xingping, He Liangen, Xu Xinhua, Salicin heart by Bai Ling, Li Li Yan. This standard replaces the standards previously issued as follows:

--- GB/T 12962-1991, GB/T 12962-1996, GB/T 12962-2005. Monocrystalline silicon

1 Scope

GB/T 12962-2015 is the Chinese national standard on monocrystalline silicon, in the field of electrical engineering. 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 10 December 2015 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 January 2017. Classification: ICS 29.045, CCS H82. 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 standard specifies the silicon single crystal grade and classification, requirements, test methods, inspection rules, marking, packaging, transportation, storage, quality certificate And orders (or contract) content. This standard applies to Czochralski, float zone method (including neutron transmutation doping and gas doping) is not greater than the diameter of 200mm was prepared A silicon single crystal. Products are mainly used in the production of semiconductor components.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 1550 extrinsic conductivity type semiconductor material testing methods

GB/T 1551 silicon single crystal resistivity measuring method

GB/T 1553 germanium and silicon minority carrier lifetime measurement of photoconductivity decay method

GB/T 1554 crystallographic perfection of silicon by preferential etch test methods

GB/T 1555 to the measurement method of a semiconductor single crystal

GB/T 1557 interstitial oxygen content in the silicon crystal infrared absorption measurement method

GB/T 1558 silicon substitutional atomic carbon content by infrared absorption method

GB/T 4058 Test Method polished silicon oxide induced defects

GB/T 6616 resistivity of semiconductor silicon and silicon thin film sheet resistivity test method of non-contact eddy current method Methods of measurement

GB/T 11073-2007 radial resistivity variation on silicon

GB/T 12964 monocrystalline silicon polished wafer

GB/T 13387 and other electronic materials silicon wafer reference surface length measurement method

GB/T 13388 wafer reference surface crystallographic orientation of the X-ray test method

3 Terms and Definitions

Terms and definitions GB/T 14264 and GB/T 30453 apply to this document defined.