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**NATIONAL STANDARD OF THE
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Replacing GB/T 14264-2009

Terminology of semiconductor materials

半导体材料术语

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Table of Contents

1 Scope	1
2 Normative references	1
3 General terms	1
4 Material preparation and process	33
5 Defects	38
47 Index	50

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 14264-2009 "Terms of Semiconductor Materials": Compared with GB/T 14264-2009, except for the structural adjustment and In addition to logical changes, the main technical changes are as follows:

--- Added 261 terms and their definitions such as "wide bandgap semiconductor" (see Chapter 3 to Chapter 5);

--- Deleted 64 terms and their definitions such as "ridge collapse" (see Chapter 3 of the:2009 edition);

--- Changed 62 terms and their definitions such as "compound semiconductor" (see Chapters 3 to 5, Chapter 3 of the:2009 edition): 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 Sub-Technical Committee of the Chemical Technical Committee (SAC/TC203/SC2): This document was drafted by: YUYAN Semiconductor Silicon Materials Co., Ltd., Nonferrous Metals Technology and Economics Research Institute Co., Ltd., Peking University Dongguan Optoelectronics Research Institute, Nanjing Guosheng Electronics Co., Ltd., Yunnan Lincang Xinyuan Germanium Industry Co., Ltd., Qinghai Yellow River Upper Reaches Hydropower Development Co., Ltd: Limited Liability Company New Energy Branch, Shanghai Institute of Optics and Precision Mechanics, Chinese Academy of Sciences, Youyan Guojinghui New Materials Co., Ltd., Zhejiang Zhong Jing Technology Co., Ltd., Jiangsu Zhongneng Silicon Technology Development Co., Ltd., Zhonghuan Leading Semiconductor Materials Co., Ltd., Xinte Energy Co., Ltd: Co., Ltd.,

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1 Scope

GB/T 14264-2024 is the Chinese national standard on terminology of semiconductor materials, 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 25 April 2024 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 November 2024. Classification: ICS 29.045, CCS H80. 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 defines general terms and definitions for semiconductor materials, terms and definitions for materials preparation and processes, and defects, as well as abbreviations: This document applies to the research and development, production, preparation and related fields of semiconductor materials:

2 Normative references

This document has no normative references:

3 General terms

1 Semiconductor The conductivity is between that of a conductor and an insulator: The resistivity is about $10^{-5}\Omega\cdot\text{cm}$ ~ $10^{12}\Omega\cdot\text{cm}$ at room temperature: A solid that has two types of carriers, negatively charged electrons and positively charged holes, and has a negative temperature coefficient of resistance, photoconductivity effect, and rectification effect: substance:

Note: Semiconductors are divided into single crystal, polycrystalline and amorphous according to their structure: 3:

2 An ideal semiconductor whose lattice is complete and free of impurities, and in which the number of electrons and holes participating in conduction is almost equal under thermal equilibrium conditions:

Note: An intrinsic semiconductor is a semiconductor that contains only trace amounts of impurities and has electrical conductivity very close to that of an ideal semiconductor: 3:3 A semiconductor material composed of atoms of a single element:

Note: Such as silicon, germanium, diamond, etc: 3:4 A semiconductor material formed by two or more different elements in a certain atomic ratio:

Note: Gallium arsenide (GaAs), indium phosphide (InP), cadmium telluride (CdTe), silicon carbide (SiC), gallium nitride (GaN), gallium oxide (GaO), indium gallium nitride (InGaN) and Aluminum gallium indium phosphide (AlGaInP), etc: 3:

5 It is usually a semiconductor material with a bandgap of not less than 2:3 eV:

Note: Common wide bandgap semiconductor materials include silicon carbide (SiC), gallium nitride (GaN), zinc oxide (ZnO), gallium oxide (beta-Ga₂O₃), diamond, aluminum nitride (AlN) etc: 3:

6 Semi-insulating GaAs Gallium arsenide single crystal with resistivity greater than 1x10⁷Ω·cm:

Note: Used as substrate material for microelectronic devices: