

ICS 31.080.10
CCS L 41



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

GB/T 4023.3-2026

Replacing GB/T 6571-1995

**Discrete semiconductor devices - Part 3: Signal, switching and
regulator diodes
(English Translation)**

Issued on: April 30, 2026

Implemented on: November 1, 2026

Issued by: State Administration for Market Regulation

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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 is Part 3 of GB/T 4023. GB/T 4023 has the following parts published.

---Semiconductor Discrete Devices Part 1: Specifications (GB/T 4023.1-2026);

---Semiconductor Devices - Discrete Devices and Integrated Circuits - Part 2: Rectifier Diodes (GB/T 4023-2015);

---Discrete Semiconductor Devices Part 4: Microwave Diodes and Transistors (GB/T 4023.4-2026).

This document supersedes GB/T 6571-1995 "Semiconductor devices - Discrete devices - Part 3: Signal (including switching) and regulating diodes".

Compared with GB/T 6571-1995, the main technical changes in the "Guidelines for the Management of Pipeline" are as follows, apart from structural adjustments and editorial modifications.

- a) The scope has been changed (see Chapter 1, Section 2 of Chapter I in the 1995 edition);
- b) Removed "signal diode", "reverse DC voltage", "reverse average voltage", and "reverse" from the list of signal diodes (including switching diodes).

Peak voltage, average forward current, peak forward current, single pulse energy, recovery charge, reverse recovery time, and forward recovery time.

"Completion time", "differential resistance", "forward DC resistance", "reverse DC resistance", "total current sensitivity", "incremental current sensitivity", "quality" the terminology and definition of "factor (detector diode)" (see Section 1.1, 2.1.1, 2.1.2, 2.1.3, Chapter II, 1995 edition) 2.2.1, 2.2.2, 2.3.2, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.4.5, 2.4.6, 2.4.8, 2.4.9, 2.4.10), voltage reference diodes the terms and definitions of "voltage regulation diode," "forward," and "reverse" in voltage regulation diodes (see Chapter II of the 1995 edition) in Section 2, sections 1.2, 1.3, and 1.4, the terms "current regulating diode," "anode," "cathode," and "adjustment range" are used.

The terminology and definitions (see Section 3, Chapter II, 1995 edition, 1.1, 1.2, 1.3, 2.1.1); added voltage reference diodes and the voltage regulation diode's "operating direction" (see 3.2.2), "adjustment range" (see 3.2.3), "operating current" (see 3.2.4), and "operating voltage" are discussed in section 3.2.2.

The terms and definitions of "voltage" (see 3.2.5), "differential resistance" (see 3.2.6), and "temperature coefficient of operating voltage" (see 3.2.7) have been revised;

"Voltage reference diode" (see 3.2.1, Section 2, Chapter II, 1.1, 1995 edition) and "limiting current" (see 3.3.6, 1995 edition) the definition is found in Section 3, Chapter II, 2.2.2 of the 2008 edition;

- c) Removed "Detection Average Output", "Damping", "Recovery, Detection", "Storage", and "Positive Transient" from the signal diode (including switching diode) settings.

Total Voltage, Average Forward Voltage, Total Reverse Transient Voltage, Forward Inrush Current, Average Output Rectified Current, and Inrush Power.

"RF continuous wave power dissipation", "RF pulse power dissipation", "damping factor", "damping resistance", "efficiency", "incremental current sensitivity" the symbols for "total current sensitivity", "single pulse energy", "operating point differential resistance", and "quality factor" (see page II of the 1995 edition).

(Section 1, paragraphs 3.2.1, 3.2.2, 3.3.1, 3.3.2, 3.3.3, and 3.3.5 of Chapter 1, in the section on voltage reference diodes and voltage regulating diodes, "in operation...") the textual symbols for "reverse DC voltage below the operating voltage range" and "long-term stability of the operating voltage" (see page II of the 1995 edition).

(Section 2, 3.3.1, 3.3.3) The temperature coefficient of the "maximum operating voltage" and "adjusting current (operating current)" in the current regulating diode.

The written symbols for "numbers" (see Section 3.3.2 and 3.3.3 of Chapter II, 1995 edition);

d) Added the symbol for "power detection efficiency" in signal and switching diodes (see 4.2.2.4); changed the symbol for "positive" in signal and switching diodes.

The symbols for "recovery time" and "repeated pulse energy" (see 4.2.2.3, 4.2.2.4, and Section 1, Chapter II, 1995 edition, 3.3.4).

3.3.5);

e) The phrase "at the specified pulse duration and specified duty cycle" has been removed from the ratings of signal diodes (including switching diodes).

The forward peak current (for switching diodes) (see Section 1, Chapter III, 1995 edition, 2.2.5); the voltage reference was removed.

For diodes and voltage regulation diodes, refer to "rated mode" and "recommended temperature" (see Section 2, Chapter III, 1995 edition, pp. 1.1 and 1.2).

The terms "Type," "Semiconductor Material," and "Shape" have been removed from the description of current diodes (see Section 3, Chapter III, 1995 edition, pp. 1, 2, and 3).

The setting includes the current diode's "maximum total power dissipation and derating curve at an ambient temperature or case temperature of 25°C" or "Derating factor" (see 5.4.1), "Maximum reverse voltage/maximum reverse current (where applicable)" (see 5.4.1), "Maximum forward voltage (where applicable)" (Time required) (see 5.4.1)

f) The "operating voltage (pulse method)" test method for voltage reference diodes and voltage regulating diodes has been removed (see the 1995 edition).

Section 2.1.2 of Chapter IV, "Operating Voltage Temperature Coefficient (Pulse Method)" (see Section 2.3.2 of Chapter IV, 1995 edition);

The "reverse recovery time" and "recovery charge" of diodes (including switching diodes) have been merged and changed into a single test method (see [link]).

6.2.5 (Section 1, Chapter IV, 1995 edition, 4.2.2, 4.2.3), "operating" in voltage reference diodes and voltage regulating diodes.

The phrases "Differential resistance within the voltage range (DC method)" and "Differential resistance within the working voltage range (pulse method)" are merged and changed to "Working Voltage Range".

The test method for "differential resistance within the current range" (see 6.3.2, Section 2.1 and 2.2 of Chapter IV, 1995 edition);

g) The condition "characteristics for determining failure upon acceptance after durability testing" in the durability test has been changed to "acceptance characteristics and reception characteristics after durability testing".

The criteria for acceptance (see 7.2, Section 1, Chapter V, 2.5 of the 1995 edition); added the operation of the current regulating diode in the durability test.

Operating conditions and test circuitry for lifespan (see 7.3).

This document is equivalent to IEC 60747-3:2013 Semiconductor devices - Part 3: Discrete devices - Signal, switching and regulating diodes.

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

---To align with existing standards, the standard name has been changed to "Semiconductor Discrete Devices Part 3: Signal, Switching and Regulation Diodes".

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 by the Ministry of Industry and Information Technology of the People's Republic of China.

This document is under the jurisdiction of the National Semiconductor Device Standardization Technical Committee (SAC/TC78).

Introduction

Semiconductor discrete devices are common basic products in the electronics industry, serving as the most fundamental units in electronic systems. Their performance and reliability directly affect...

This affects the quality and reliability of engineering projects. GB/T 4023, as a fundamental standard, aims to standardize the parameter system, test methods, and...

The reliability assessment is proposed to consist of nine parts.