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

GB/T 13539.4-2016

Replacing GB/T 13539.4-2009

**Low-voltage fuses -- Part 4: Supplementary requirements for
fuse-links for the protection of semiconductor devices
(English Translation)**

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Appendix AA (informative) Guidelines for the coordination of fuse links and semiconductor equipment

APPENDIX BB (Normative Appendix) The manufacturer shall use the fuse for the protection of semiconductor equipment listed in the product manual (sample)

Foreword

GB 13539 "Low-voltage fuses" currently includes the following six parts.

- Part 1. Basic requirements;
- Part 2. Supplementary requirements for fuses used by full-time personnel (mainly for industrial fuses) Standardized fuse system display Examples A to K;
- Part 3. Supplementary requirements for fuses used by unskilled personnel (mainly for fuses for household and similar purposes) Standardization Fuse System Examples A to F;
- Part 4. Supplementary requirements for fuse - links for the protection of semiconductor equipment;
- Part 5. Application guidelines for low - voltage fuses;
- Part 6. Supplementary requirements for fuse - links for the protection of solar photovoltaic systems.

This section is part 4 of GB 13539.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

Replacement of GB/T 13539.4-2009 "Low-voltage fuses" Part 4. Supplement to fuse-links for the protection of semiconductor equipment begging". The main technical changes in this

part compared to GB/T 13539.4-2009 are as follows.

- increase VSI (voltage source inverter) content, including VSI characteristics, technical requirements and test methods;
- Table 101 "Conventional time and convention of" gR "and 'gS' type fuse-links", "gR" type No fusing current I_{nf} From $1.1I_n$ Changed to $1.13I_n$;
- Table 102 "complete test list" deleted the exchange No. 6 ~ No.10 test, added VSINo.21 test, and footnote a Modified as "if the ambient air temperature between 10 °C and 30 °C, arc I_2t characteristics of effective";
- Table 103 "The same fuse-fuse series of the smallest rated current fuse test list" deleted the exchange No.6 test and DC no.11 test;
- 8.4.3.6 "Indicator device and impactor (if any) action" increase "indicates the performance and performance of the device or impactor verified by the manufacture Plant and user consultation ";
- the original table 106 "verify the AC cut-off current, I_2t characteristics and arc voltage characteristics of the test parameters" deleted, changed to the new table 106 "VSI fuse breaking capacity test parameters";
- Appendix CC "CC.3B Bolt Connection Fuse System - DIN" and "CC.5A Contact Chip Fuse System" Increased the "gR 'and' gS 'fuse-type fuse time and the agreed current" table;
- Appendix CC North American fuse-link system increases the recovery voltage requirements of the breaking capacity test;
- Appendix CC Added French B-type cylindrical cap fuse system.

This part uses the translation method equivalent to the use of IEC 60269-4.:2012 "Low-voltage fuses Part 4. Semiconductor device protection fuse Supplementary requirements ".

In this part of the normative reference to the international documents have a consistent correspondence between the following documents.

- GB/T 321-2005 priority and priority series (ISO 3. 1973, IDT);
- GB/T 5465.2-2008 Graphical symbols for electrical equipment - Part 2. Graphical symbols (IEC 60417DB..2007, IDT);
- Low - voltage fuses - Part 1. Basic requirements (IEC 60269-1.:2009, IDT);
- GB/T 13539.2-2015 Low-voltage fuses Part 2. Supplementary requirements for fuses used by professionals (mainly Industrial Fuses) Standardized Fuse System Examples A to K (IEC 60269-2.:2013, IDT);

- GB 13539.3-2008 Low - voltage fuses - Part 3. Supplementary requirements for fuses used by unskilled personnel (mainly for Household and similar fuses) Standardized fuse systems Examples A to F (IEC 60269-3.:2006, IDT).

This part makes the following editorial changes.

- to remove the preamble of international standards;

--- Figure CC.6 in the upper right there are three "x" cross-section symbols, two suspects are wrong, delete; the lower right of the figure "X detail 6)" doubt, change for "X detail 5)";

- "CC.6.1" (see CC.6.4) "is incorrect and changed to" (see CC.6.3) ".

This part is made by China Electrical Equipment Industry Association.

This part is headed by the National Standardization Technical Committee for Fuses (SAC/TC340).

This part is responsible for the drafting unit. Shanghai Electric Research Institute.

This part participates in the drafting unit. Shanghai Electric Ceramics Factory Co., Ltd., People's Electric Group Co., Ltd., Hailey (China) Electronic Technology (Shanghai) Co., Ltd., Zhejiang Zhengtai Electric Appliance Co., Ltd., Zhejiang Shengtai Electric Appliance Co., Ltd., Zhejiang West melting Electric Co., Ltd., Shanghai Siemens Line Protection System Co., Ltd., Wenzhou three real Electric Co., Ltd., Zhejiang Sony fuse Co., Ltd., Yueqing Shanghai melting special fuse Co., Ltd., Xi'an in the melting Electric Co., Ltd., Cooper Xi'an fuse Co., Ltd., Shanghai Electric Equipment testing.

1 General

In addition to the provisions of IEC 60269-1.:2006, add the following requirements.

The fuse for the protection of semiconductor equipment shall comply with all requirements of IEC 60269-1.:2006 and shall also comply with the requirements of the Supplement Claim.

1.1 Scope and purpose

The supplementary requirements of this part apply to the fuse link mounted on a device with a semiconductor device which is suitable for the nominal voltage More than AC 1000V or DC 1500V circuit. If applicable, can also be used for higher nominal voltage circuits.

Note 1: Such fuse links are commonly referred to as "semiconductor fuse links".

NOTE 2 In most cases, a portion of the combination can be used as a fuse base. Due to the diversity of equipment, it is difficult to make general provisions; combination equipment Whether it is suitable for the fuse base, should be consulted by the user and the manufacturer. However, if you use a separate fuse base or fuse support, they are shall comply with the relevant requirements of

IEC 60269-1.:2006.

Note 3: IEC 60269-6 is dedicated to the protection of solar photovoltaic systems.

The purpose of this part is to determine the characteristics of the semiconductor fuse, so that under the premise of the same size, you can use the same characteristics of the other the type of fuse is replaced by a semiconductor fuse. Therefore, this section specifically provides.

a) The following characteristics of the fuse link.

- 1) Rating;
 - 2) temperature rise during normal operation;
 - 3) dissipated power;
 - 4) time-current characteristics;
 - 5) breaking capacity;
 - 6) cut off the current characteristics and I^2t characteristics;
 - 7) Arc voltage characteristics.
- b) Type test to verify the characteristics of fuse links;
- c) Fuse mark;
- d) Technical data to be provided (see Appendix BB).

1.2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article Pieces. For undated references, the latest edition (including all modifications) applies to this document.

IEC 60269-1.:2006 Low-voltage fuses Part 1. Basic requirements (Low-voltagefuses-Part 1. Generalre-quirements IEC 60269-2.:2006 Low - voltage fuses - Part 2. Supplementary requirements for fuses used by full - time personnel (mainly for industrial use) Fuses) Standardized Fuse System Examples A to J (Low-voltagefuses-Part 2. Supplementaryrequirementsfor fusesforusebyauthorizedpersons (fusesmainlyforindustrialapplication) -Examplesofstandardized