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GB/T 42706.2-2023

Electronic components - Long-term storage of electronic semiconductor devices - Part 2: Deterioration mechanisms

电子元器件 半导体器件长期贮存 第2部分：退化机理

Issued on: May 23, 2023 **Implemented on: September 1, 2023**

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Standardization Administration of the PRC

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Foreword

This document was issued on 23 May 2023 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 September 2023.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

It is classified under ICS 31.020, Chinese classification L40.

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 is part 2 of GB/T 42706 "Long-term Storage of Electronic Components and Semiconductor Devices". GB/T 42706 has been published

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the following sections.

--- Part 1. General;

--- Part 2. Degradation mechanism;

--- Part 5. Chips and wafers.

This document is equivalent to IEC 62435-2.2017 "Long-term storage of electronic components and semiconductor devices - Part 2. Degradation mechanisms".

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

a) The informative reference to JEDEC JEP122 in 4.8 is deleted;

b) In Table A.1, in order to avoid confusion between the letter "T" in the last column and the same letter in the fourth column, change the letter "T" in the last column to

became the letter "C";

c) Adjusted references.

Please note that some contents of this document may refer to patents. The issuing agency of this document assumes no responsibility for identifying patents.

This document is 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).

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Introduction

This document describes an implementation method for long-term storage. Long-term

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storage refers to electronic components that are expected to be stored for more than 12 months

storage.

In recent years, the elimination of electronic components, especially integrated circuits, has become more and more serious. With the development of science and technology, and used in aviation, railway or energy

Compared with industrial equipment in the source field, the life cycle of components is very short. Therefore, systematic storage of components is the solution to the elimination problem.

main method.

Long-term storage requires good implementation of storage procedures, especially the storage environment. It is recommended that all transport, maintenance

care, storage and testing operations.

This document proposes a method of delaying obsolescence to the greatest extent possible, but does not guarantee that components will be in perfect working condition after storage.

operating status.

Because some systems are very old, in some cases 40 years or more, how to perform repairs and obtain spare parts becomes a

The problems that users and maintenance organizations need to solve. For example, some components required to service these systems cannot be used during the life of the system

Spare parts obtained from the original supplier or used for assembly are produced at the beginning of production but require long-term storage. of this document

The purpose is to provide guidance for long-term storage of components.

GB/T 42706 "Long-term storage of electronic components and semiconductor devices" aims to ensure that after long-term storage of components, there is sufficient

reliability. Encourage users to ask suppliers to provide technical parameters of related products to demonstrate the storage process that meets user needs. These labels

The standard aims to provide relevant guidance for electronic components that require long-term storage.

GB/T 42706 "Long-term storage of electronic components and semiconductor devices" is divided into 9 parts. Part 1~Part 4 applies to

All long-term storage, and contains general requirements and guidance. Parts 5 to 9 apply

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to the storage of several specific product types. exist

While meeting the general requirements of Parts 1 to 4, the requirements for specific product types must also be met.

Beginning with Part 5, it deals with electronic components that require different storage conditions.

GB/T 42706 "Long-term Storage of Electronic Components and Semiconductor Devices" corresponds to the IEC 62435 series standards and is proposed to be divided into the following

part.

--- Part 1. General. The purpose is to specify the relevant terms, definitions and principles of long-term storage, and to provide effective long-term storage of components.

Storage concepts, good working practices and general methods.

--- Part 2. Degradation mechanism. The purpose is to specify the degradation mechanisms and

Mode of degradation, and guidance on test methods for assessing general degradation mechanisms.

--- Part 3. Data. The purpose is to specify the requirements for all aspects of data storage during the long-term storage of electronic components, and to maintain traceability.

traceability or data link integrity.

--- Part 4. Storage. The purpose is to specify the long-term storage method of electronic components, as well as related recommended conditions, including transportation, control

control and storage facilities.

--- Part 5. Chips and wafers. The purpose is to specify single chips, parts of wafers or entire wafers, as well as metallized structures (introduced

storage conditions and rules for chips, as well as general-purpose and special-purpose packaging products containing chips or wafers

Provide operational guidance.

--- Part 6. Packaged or coated components. The purpose is to specify the long-term storage methods and recommended conditions for packaged or coated components, including

including transport, containment, and storage facility security.

--- Part 7. MEMS. The purpose is to specify the matters needing attention and basic requirements for long-term storage of MEMS.

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