
Elektronske komponente - Dolgoročno skladiščenje elektronskih polprevodniških elementov - 9. del: Posebni primeri (IEC 62435-9:2021)

Electronic components - Long-term storage of electronic semiconductor devices - Part 9: Special Cases (IEC 62435-9:2021)

Elektronische Bauteile - Langzeitlagerung elektronischer Halbleiterbauteile – Teil 9: Sonderfälle (IEC 62435-9:2021)

Composants électroniques - Stockage de longue durée des dispositifs électroniques à semiconducteurs - Partie 9: Cas particuliers (IEC 62435-9:2021)

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EN IEC 62435-9:2021 (E)**European foreword**

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 IEC 62435-7 NOTE Harmonized as EN IEC 62435-7

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-192	-	International electrotechnical vocabulary Part 192: Dependability	--	-

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NORME INTERNATIONALE

**Electronic components – Long-term storage of electronic semiconductor devices –
Part 9: Special cases**

**Composants électroniques – Stockage de longue durée des dispositifs électroniques à semiconducteurs –
Partie 9: Cas particuliers**

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failure mechanisms and stimuli for memory devices

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRONIC COMPONENTS – LONG-TERM STORAGE
OF ELECTRONIC SEMICONDUCTOR DEVICES –**
Part 9: Special cases
FOREWORD

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IEC 62435-9 has been prepared by IEC technical committee 47: Semiconductor devices. It is an International Standard.

The text of this International Standard is based on the following documents:

DRAFT	Report on voting
47/2700/FDIS	47/2716/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts in the IEC 62435 series, published under the general title *Electronic components – Long-term storage of electronic semiconductor devices*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

This document applies to the long-term storage of electronic components in special cases of configuration. The custom-client relationship for storage of all cases is also included.

This document deals with the long-term storage (LTS) of electronic devices drawing on the best long-term storage practices currently known. For the purposes of this document, LTS is defined as any device storage whose duration can be more than 12 months for product scheduled for long duration storage. While intended to address the storage of unpackaged semiconductors and packaged electronic devices, nothing in this document precludes the storage of other items under the storage levels defined herein.

Although it has always existed to some extent, obsolescence of electronic components and particularly of integrated circuits, has become increasingly intense over the last few years.

Indeed, with the existing technological boom, the commercial life of a component has become very short compared with the life of industrial equipment such as that encountered in the aeronautical field, the railway industry or the energy sector.

The many solutions enabling obsolescence to be resolved are now identified. However, selecting one of these solutions should be preceded by a case-by-case technical and economic feasibility study, depending on whether storage is envisaged for field service or production, for example:

- remedial storage as soon as components are no longer marketed;
- preventive storage anticipating declaration of obsolescence.

Taking into account the expected life of some installations, sometimes covering several decades, the qualification times, and the unavailability costs, which can also be very high, the solution to be adopted to resolve obsolescence should often be rapidly implemented. This is why the solution retained in most cases consists in systematically storing components which are in the process of becoming obsolescent.

The technical risks of this solution are, a priori, fairly low. However, it requires perfect mastery of the implemented process and especially of the storage environment, although this mastery becomes critical when it comes to long-term storage. All handling, protection, storage and test operations are recommended to be performed according to the state of the art.

The application of the approach proposed in this document in no way guarantees that the stored components are in perfect operating condition at the end of this storage. It only comprises a means of minimizing potential and probable degradation factors.

Some electronic device users have the need to store electronic devices for long periods of time. Lifetime buys are commonly made to support production runs of assemblies that well exceed the production timeframe of its individual parts. This puts the user in a situation requiring careful and adequate storage of such parts to maintain the as-received solderability and minimize any degradation effects to the part over time. Major degradation concerns are moisture, electrostatic fields, ultra-violet light, large variations in temperature, air-borne contaminants, and outgassing.

Warranties and sparing also present a challenge for the user or repair agency as some systems have been designated to be used for long periods of time, in some cases for up to 40 years or more. Some of the devices needed for repair of these systems will not be available from the original supplier for the lifetime of the system or the spare assembly may be built with the original production run but then require long-term storage. This document was developed to provide a standard for storing electronic devices for long periods of time.

The storage of devices that are moisture sensitive but that do not need to be stored for long periods of time is dealt with in IEC TR 62258-3.