

This is a preview - click here to buy the full publication



IEC 60749-6

Edition 2.0 2017-03

# INTERNATIONAL STANDARD

---

**Semiconductor devices – Mechanical and climatic test methods –  
Part 6: Storage at high temperature**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

---

ICS 31.080.01

ISBN 978-2-8322-4003-8

**Warning! Make sure that you obtained this publication from an authorized distributor.**

## CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references .....	5
3 Terms and definitions .....	5
4 Test apparatus .....	5
5 Procedure.....	5
5.1 Test conditions .....	5
5.2 Measurements .....	6
5.3 Failure criteria.....	6
6 Summary .....	7
Bibliography.....	8
Table 1 – High temperature storage conditions .....	6

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

### **SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –**

#### **Part 6: Storage at high temperature**

#### **FOREWORD**

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60749-6 has been prepared by IEC technical committee 47: Semiconductor devices.

This second edition cancels and replaces the first edition published in 2002. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) additional test conditions;
- b) clarification of the applicability of test conditions.

The text of this standard is based on the following documents:

FDIS	Report on voting
47/2347/FDIS	47/2372/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60749 series, published under the general title *Semiconductor devices – Mechanical and climatic test methods*, 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 "<http://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.

A bilingual version of this publication may be issued at a later date.

## **SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –**

### **Part 6: Storage at high temperature**

#### **1 Scope**

The purpose of this part of IEC 60749 is to test and determine the effect on all solid state electronic devices of storage at elevated temperature without electrical stress applied. This test is typically used to determine the effects of time and temperature, under storage conditions, for thermally activated failure methods and time-to-failure of solid state electronic devices, including non-volatile memory devices (data-retention failure mechanisms). This test is considered non-destructive but should preferably be used for device qualification. If such devices are used for delivery, the effects of this highly accelerated stress test will need to be evaluated.

Thermally activated failure mechanisms are modelled using the Arrhenius equation for acceleration, and guidance on the selection of test temperatures and durations can be found in IEC 60749-43.

#### **2 Normative references**

There are no normative references in this document.