

# INTERNATIONAL STANDARD

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## **Semiconductor devices – Mechanical and climatic test methods –**

### **Part 1: General**



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### **Part 1: General**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SEMICONDUCTOR DEVICES –  
MECHANICAL AND CLIMATIC TEST METHODS –****Part 1: General**

## FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
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- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60749-1 has been prepared by IEC technical committee 47: Semiconductor devices.

This first edition of IEC 60749-1, as well as the other parts of this series, will replace the previous edition of IEC 60749 in which the test methods were contained in one standard which was subdivided into chapters relating to mechanical test methods, climatic test methods and miscellaneous test methods.

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

FDIS	Report on voting
47/1638/FDIS	47/1653/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

Each test method governed by this standard and which is part of the series is a stand-alone document, numbered IEC 60749-2, IEC 60749-3, etc. The numbering of these test methods is sequential, and there is no relationship between the number and the test method (i.e. no grouping of test methods). The list of these tests will be available in the IEC Internet site and in the catalogue.

Updating of any of the individual test methods is independent of any other part.

The committee has decided that the contents of this publication will remain unchanged until 2007. At this date, the publication will be

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

The contents of the corrigendum of August 2003 have been included in this copy.

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## INTRODUCTION

Activity within IEC technical committee 47, working group 2, includes the generation, coordination and review of climatic, electrical (of which only ESD, latch-up and electrical conditions for life tests are considered), mechanical test methods, and associated inspection techniques needed to assess the quality and reliability of the design and manufacture of semiconductor products and processes.

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# SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –

## Part 1: General

### 1 Scope

This part of IEC 60749 is applicable to semiconductor devices (discrete devices and integrated circuits) and establishes provisions common to all the other parts of the series.

In the case of contradiction between this standard and a relevant procurement specification, the latter should govern.

### 2 Normative references

The following referenced documents are indispensable for the application 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.

IEC 60050 (all parts), *International Electrotechnical Vocabulary (IEV)*

IEC 60747 (all parts), *Semiconductor devices – Discrete devices*

IEC 60748 (all parts), *Semiconductor devices – Integrated circuits*

### 3 Terms, definitions and letter symbols

The terms, definitions and symbols used in IEC 60747 and IEC 60748 apply. For general terminology readers are referred to IEC 60050 (VEI) series.

### 4 Standard atmospheric conditions

**4.1** All tests and recoveries, unless otherwise specified, shall be carried out under standard atmospheric conditions for testing:

- temperature: 15 °C to 35 °C;
- relative humidity: 45 % to 75 %, where appropriate;
- air pressure: 86 kPa to 106 kPa.

**4.2** All electrical measurements, as well as recoveries followed by measurements, shall however, be carried out under the atmospheric conditions:

- temperature:  $(25 \pm 5)$  °C;
- relative humidity: 45 % to 75 %, where appropriate;
- air pressure: 86 kPa to 106 kPa.