SLOVENSKI STANDARD

SIST EN 60749-31:2004

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Semiconductor devices - Mechanical and climatic test methods - Part 31: Flammability of plastic-encapsulated devices (internally induced) (IEC 60749-31:2002)

ICS 31.080.01

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English version

Semiconductor devices - Mechanical and climatic test methods Part 31: Flammability of plastic-encapsulated devices (internally induced)

(IEC 60749-31:2002)

Dispositifs à semiconducteurs - Méthodes d'essais mécaniques et climatiques Partie 31: Inflammabilité des dispositifs à encapsulation plastique (cas d'une cause interne d'inflammation) (CEI 60749-31:2002)

Halbleiterbauelemente - Mechanische und klimatische Prüfverfahren Teil 31: Entflammbarkeit von Bauelementen in Kunststoffgehäusen (Selbstentzündung) (IEC 60749-31:2002)

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC
European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

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Foreword

The text of the International Standard IEC 60749-31:2002 was approved by CENELEC as EN 60749-31 on 2002-09-24.

The text of this International Standard was reproduced from IEC 60749:1996, chapter 4, subclause 1.1 without change. Therefore, it has not been submitted to vote a second time and is still based on document 47/1394/FDIS.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2004-01-01

– latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2005-10-01

Each test method governed by this standard and which is part of the series is a stand-alone document, numbered EN 60749-2, EN 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 CENELEC internet site and in the catalogue.

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

Endorsement notice

The text of the International Standard IEC 60749-31:2002 was approved by CENELEC as a European Standard without any modification.

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Partie 31:
Inflammabilité des dispositifs à encapsulation plastique (cas d'une cause interne d'inflammation)

Semiconductor devices –
Mechanical and climatic test methods –

Part 31:
Flammability of plastic-encapsulated devices (internally induced)

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –

Part 31: Flammability of plastic-encapsulated devices (internally induced)

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.
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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 60749-31 has been prepared by IEC technical committee 47: Semiconductor devices.

The text of this test method is reproduced from IEC 60749 Ed.2, chapter 4, clause 1.1 without change. It has therefore not been submitted to vote a second time and is still based on the following documents:

FDIS	Report on voting
47/1394/FDIS	47/1402/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 IEC 60749-1 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.

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.

SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –

Part 31: Flammability of plastic-encapsulated devices (internally induced)

1 Scope and object

This part of IEC 60749 is applicable to semiconductor devices (discrete devices and integrated circuits).

The object of this test is to determine whether the device ignites due to internal heating caused by excessive overloads.

NOTE This test is identical to the test method contained in 1.1 of chapter 4 of IEC 60749 (1996), apart from changes to this clause, the addition of titles to clauses 2 and 3 and renumbering.

2 Normative references

None.

3 Test procedure

The device shall be operated in free air without a heat sink and the internal electrical power dissipation slowly increased from the maximum rated value until any of the following occurs:

1) an internal power dissipation equal to five times the maximum rated power dissipation at 25 °C is reached; in this case, the power shall be maintained for a minimum duration of 1 min; or
2) the device becomes either open-circuited or short-circuited, or its resistance increases to such a high value that any further increase in power dissipation is impracticable; or
3) the device ignites.

A device shall constitute a failure only if it smoulders or ignites.

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