SLOVENSKI STANDARD

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Semiconductor devices - Mechanical and climatic test methods - Part 36: Acceleration, steady state (IEC 60749-36:2003)

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EUROPEAN STANDARD

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EN 60749-36

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English version

Semiconductor devices – Mechanical and climatic test methods Part 36: Acceleration, steady state (IEC 60749-36:2003)

Dispositifs à semiconducteurs –
Méthodes d'essais mécaniques
et climatiques
Partie 36: Accélération constante
(CEI 60749-36:2003)

Halbleiterbauelemente –
Mechanische und klimatische
Prüfverfahren
Teil 36: Gleichmäßiges Beschleunigen
(IEC 60749-36:2003)

This European Standard was approved by CENELEC on 2003-04-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

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

Ref. No. EN 60749-36:2003 E

Foreword

The text of document 47/1667/FDIS, future edition 1 of IEC 60749-36, prepared by IEC TC 47, Semiconductor devices, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60749-36 on 2003-04-01.

This mechanical and climatic test method, as it relates to acceleration, steady state, is a complete rewrite of the test contained in Clause 5, Chapter 2 of EN 60749:1999.

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) 2006-04-01

Annexes designated "normative" are part of the body of the standard.
In this standard, annex ZA is normative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60749-36:2003 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60068-2-7	- [1)]	Basic environmental testing procedures Part 2: Tests - Test Ga and guidance: Acceleration, steady state	EN 60068-2-7	1993 [2)]

1) Undated reference.

2) Valid edition at date of issue.

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Dispositifs à semiconducteurs –
Méthodes d'essais mécaniques et climatiques –

Partie 36:
Accélération constante

Semiconductor devices –
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Part 36:
Acceleration, steady state

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –

Part 36: Acceleration, steady state

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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5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
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 60749-36 has been prepared by IEC technical committee 47: Semiconductor devices.

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

FDIS	Report on voting
47/1667/FDIS	47/1685/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.

The mechanical and climatic test method, as it relates to acceleration, steady state, is a complete rewrite of the test contained in Clause 5, Chapter 2 of IEC 60749.

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

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.

SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –

Part 36: Acceleration, steady state

1 Scope

This part of IEC 60749 provides a test for determining the effects of constant acceleration on cavity-type semiconductor devices. It is an accelerated test designed to indicate types of structural and mechanical weaknesses not necessarily detected in shock and vibration test. It may be used as a high stress (destructive) test to determine the mechanical limits of the package, internal metallisation and lead system, die or substrate attachment, and other elements of the microelectronic device. When proper stress levels have been established this test method may also be employed as a non-destructive in-line 100 % screen to detect and eliminate devices with lower than normal mechanical strengths in any of the structural elements.

In general, this acceleration steady-state test method is in conformity with IEC 60068-2-7 but, due to specific requirements of semiconductors, the clauses of this standard apply.

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 60068-2-7, *Environmental testing – Part 2: Tests – Test Ga and guidance: Acceleration, steady state*

3 Test apparatus

Constant acceleration tests shall be made on an apparatus capable of applying the specified acceleration for the required time.

4 Procedure

The device shall be restrained by its case, or by normal mountings, and the leads or cables secured. Unless otherwise specified, a constant acceleration of the value specified shall then be applied to the device for 1 min in each of the orientations X_1, X_2, Y_1, Z_1 and Z_2. For devices with internal elements mounted with the major seating plane perpendicular to the Y axis, the Y_1 orientation shall be defined as that one in which the elements tend to be removed from their mount. Unless otherwise specified, test condition E shall apply.