SLOVENSKI STANDARD

SIST EN 60749-5:2004

julij 2004

Semiconductor devices - Mechanical and climatic test methods - Part 5: Steady-state temperature humidity bias life test (IEC 60749-5:2003)

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ICS 31.080.01

Referenčna številka
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EUROPEAN STANDARD **EN 60749-5**

NORME EUROPÉENNE

EUROPÄISCHE NORM March 2003

ICS 31.080.01

English version

Semiconductor devices - Mechanical and climatic test methods Part 5: Steady-state temperature humidity bias life test (IEC 60749-5:2003)

Dispositifs à semiconducteurs -
Méthodes d'essais mécaniques
et climatiques
Partie 5: Essai continu de durée
de vie sous température et humidité
avec polarisation
(CEI 60749-5:2003)

Halbleiterbauelemente -
Mechanische und klimatische Prüfverfahren
Teil 5: Lebensdauerprüfung bei
konstanter Temperatur und Feuchte
unter elektrischer Beanspruchung
(IEC 60749-5:2003)

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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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Ref. No. EN 60749-5:2003 E

Foreword

The text of document 47/1661/FDIS, future edition 1 of IEC 60749-5, prepared by IEC TC 47, Semiconductor devices, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60749-5 on 2003-03-01.

This mechanical and climatic test method, as is relates to steady-state temperature humidity bias life test, is a complete rewrite of the test contained in Clause 4B, Chapter 3 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) 2003-12-01

– latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2006-03-01

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

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The text of the International Standard IEC 60749-5:2003 was approved by CENELEC as a European Standard without any modification.

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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 60749-4	- [1]	Semiconductor devices - Mechanical and climatic test methods Part 4: Damp heat, steady-state, highly accelerated stress test (HAST)	EN 60794-4	2002 [2]

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[1] Undated reference.

[2] Valid edition at date of issue.

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NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
60749-5

Première édition
First edition
2003-01

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

Partie 5:
Essai continu de durée de vie sous température et humidité avec polarisation

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Semiconductor devices –
Mechanical and climatic test methods –

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Part 5:
Steady-state temperature humidity bias life test

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International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –

Part 5: Steady-state temperature humidity bias life test

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.
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International Standard IEC 60749-5 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
47/1661/FDIS	47/1678/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 2.

This mechanical and climatic test method, as is relates to steady-state temperature humidity bias life test, is a complete re-write of the test contained in Clause 4B, Chapter 3 of IEC 60749.

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 5: Steady-state temperature humidity bias life test

1 Scope

This part of IEC 60749 provides a steady-state temperature and humidity bias life test for the purpose of evaluating the reliability of non-hermetic packaged solid-state devices in humid environments.

NOTE This test is in general accord with IEC 60068-2-3 (withdrawn)[1], but due to specific requirements of semiconductors, the following text is applied.

This test method is considered destructive.

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.

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IEC 60749-4, *Semiconductor devices – Mechanical and climatic test methods – Part 4: Damp heat, steady-state, highly accelerated stress test (HAST)*

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3 General

This test employs conditions of temperature, humidity and bias which accelerate the penetration of moisture through the external protective material (encapsulant or seal) or along the interface between the external protective material and the metallic conductors which pass through it.

Where both this steady-state, humidity bias test and the damp heat, highly accelerated stress test (HAST) of IEC 60749-4 are performed, the results of this 85 °C/85 % RH steady-state test will take priority over the results of the HAST test, which is an accelerated test designed to activate the same failure mechanisms.

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[1] IEC 60068-2-3, *Environmental testing – Part 2: Tests – Test Ca: Damp heat steady state.*