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Semiconductor devices - Mechanical and climatic test methods - Part 24: Accelerated moisture resistance - Unbiased HAST

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FOREWORD

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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 60749-24:2004. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 60749-24 has been prepared by IEC technical committee 47: Semiconductor devices. It is an International Standard.

This second edition, cancels and replaces the first edition published in 2004. It is based on JEDEC document JESD22-A118B.01. It is used with permission of the copyright holder, JEDEC Solid State Technology Association. This edition constitutes a technical revision.

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

a) rearrangement of clauses to reposition requirements;
b) addition of two notes to the post-test electrical procedures.

The text of this International Standard is based on the following documents:

Draft	Report on voting
47/2957/FDIS	47/2974/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts of the IEC 60749 series, under the general title *Semiconductor devices – Mechanical and climatic test methods*, can be found in 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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,
– withdrawn, or
– revised.

1 Scope ~~and object~~

This part of IEC 60749 specifies unbiased highly accelerated stress testing (HAST). HAST is performed for the purpose of evaluating the reliability of non-hermetically packaged solid-state devices in humid environments.

It is a highly accelerated test which employs temperature and humidity under non-condensing conditions to 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. Bias is not applied in this test to ensure that the failure mechanisms potentially overshadowed by bias can be uncovered (e.g. galvanic corrosion).

This test is used to identify failure mechanisms internal to the package and is destructive.

~~NOTE This test is a complete rewrite of the test contained in Clause 4C of Chapter 3 of IEC 60749 (1996) (without bias voltage).~~

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60749-5, *Semiconductor devices - Mechanical and climatic test methods - Part 5: Steady-state temperature humidity bias life test*

IEC 60749-33, *Semiconductor devices - Mechanical and climatic test methods - Part 33: Accelerated moisture resistance - Unbiased autoclave*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

– ISO Online browsing platform: available at https://www.iso.org/obp
– IEC Electropedia: available at https://www.electropedia.org