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INTERNATIONAL STANDARD

Semiconductor devices – Mechanical and climatic test methods – Part 6: Storage at high temperature

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Part 6: Storage at high temperature

FOREWORD

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International Standard IEC 60749-6 has been prepared by IEC technical committee 47: Semiconductor devices.

This second edition cancels and replaces the first edition published in 2002. This edition constitutes a technical revision.

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

a) additional test conditions;
b) clarification of the applicability of test conditions.

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

FDIS	Report on voting
47/2347/FDIS	47/2372/RVD

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

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

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

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- withdrawn,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

A bilingual version of this publication may be issued at a later date.

SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –

Part 6: Storage at high temperature

1 Scope

The purpose of this part of IEC 60749 is to test and determine the effect on all solid state electronic devices of storage at elevated temperature without electrical stress applied. This test is typically used to determine the effects of time and temperature, under storage conditions, for thermally activated failure methods and time-to-failure of solid state electronic devices, including non-volatile memory devices (data-retention failure mechanisms). This test is considered non-destructive but should preferably be used for device qualification. If such devices are used for delivery, the effects of this highly accelerated stress test will need to be evaluated.

Thermally activated failure mechanisms are modelled using the Arrhenius equation for acceleration, and guidance on the selection of test temperatures and durations can be found in IEC 60749-43.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

4 Test apparatus

The controlled temperature chamber required for this test shall be capable of maintaining the test temperature within the tolerances specified in Table 1. Electrical equipment shall be capable of performing the appropriate measurements for the devices being tested, including writing and verifying the required data retention pattern(s) for nonvolatile memories.

5 Procedure

5.1 Test conditions

The devices under test (DUT) shall be subject to continuous storage (except when there is a requirement in the applicable procurement document to return the DUTs to room ambient for interim electrical measurements) at one of the temperatures specified in Table 1. Qualification and reliability monitoring test conditions typically require a test duration of 1 000 °C $^{+24}_{0}$ at test temperature B of Table 1. Other test conditions can be used as appropriate.