
Semiconductor devices - Mechanical and climatic test methods - Part 11: Rapid change of temperature - Two-fluid-bath method (IEC 60749-11:2002)

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EUROPEAN STANDARD

EN 60749-11

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2002

ICS 31.080.01

Partly supersedes EN 60749:1999 + A1:2000 + A2:2001

English version

**Semiconductor devices -
Mechanical and climatic test methods
Part 11: Rapid change of temperature -
Two-fluid-bath method
(IEC 60749-11:2002)**

Dispositifs à semiconducteurs -
Méthodes d'essais mécaniques
et climatiques
Partie 11: Variations rapides
de température -
Méthode des deux bains
(CEI 60749-11:2002)

Halbleiterbauelemente -
Mechanische und klimatische
Prüfverfahren
Teil 11: Rascher Temperaturwechsel -
Zweibäderverfahren
(IEC 60749-11:2002)

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This European Standard was approved by CENELEC on 2002-07-02. 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

Foreword

The text of document 47/1605/FDIS, future edition 1 of IEC 60749-11, prepared by IEC TC 47, Semiconductor devices, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60749-11 on 2002-07-02.

This mechanical and climatic test method, as it relates to rapid change of temperature and two-fluid-bath method, is a complete rewrite of the test contained in 1.2, 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) 2003-04-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2005-07-01

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 60749-11:2002 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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60749-3	- ¹⁾	Semiconductor devices - Mechanical and climatic test methods Part 3: External visual examination	EN 60749-3	2002 ²⁾
IEC 60068-2-14	1984	Environmental testing Part 2: Tests - Test N: Change of temperature	EN 60068-2-14 ³⁾	1999

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¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

³⁾ EN 60068-2-14 includes A1:1986 to IEC 60068-2-14.

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**NORME
INTERNATIONALE
INTERNATIONAL
STANDARD**

**CEI
IEC**

60749-11

Première édition
First edition
2002-04

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

**Partie 11:
Variations rapides de température –
Méthode des deux bains**

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**Part 11:
Rapid change of temperature –
Two-fluid-bath method**

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Commission Electrotechnique Internationale
International Electrotechnical Commission
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SEMICONDUCTOR DEVICES –
MECHANICAL AND CLIMATIC TEST METHODS –****Part 11: Rapid change of temperature –
Two-fluid-bath method**

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 60749-11 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
47/1605/FDIS	47/1621/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 mechanical and climatic test method, as it relates to rapid change of temperature and two-fluid-bath method, is a complete rewrite of the test contained in 1.2, chapter 3 of IEC 60749.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

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 corrigenda of January 2003 and August 2003 have been included in this copy.

INTRODUCTION

This test is conducted to determine the resistance of a device to sudden exposure to extreme or rapid changes in temperature and to the effect of alternate exposure to these extremes. Exposure to this test may not induce the same failure mechanisms as exposure to air to air temperature cycling.

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