BS EN IEC 60749-20:2020

BSI Standards Publication

Semiconductor devices — Mechanical and climatic test methods

Part 20: Resistance of plastic encapsulated SMDs to the combined effect of moisture and soldering heat

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National foreword

This British Standard is the UK implementation of EN IEC 60749-20:2020. It is identical to IEC 60749-20:2020. It supersedes BS EN 60749-20:2009, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EPL/47, Semiconductors.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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English Version

Semiconductor devices - Mechanical and climatic test methods - Part 20: Resistance of plastic encapsulated SMDs to the combined effect of moisture and soldering heat (IEC 60749-20:2020)

Dispositifs à semiconducteurs - Méthodes d'essais mécaniques et climatiques - Partie 20 : Résistance des CMS à boîtier plastique à l'effet combiné de l'humidité et de la chaleur de brasage (IEC 60749-20:2020)

Halbleiterbauelemente - Mechanische und klimatische Prüfverfahren - Teil 20: Beständigkeit kunststoffverkappter oberflächenmontierbarer Bauelemente (SMD) gegenüber der kombinierten Beanspruchung von Feuchte und Lötwärme (IEC 60749-20:2020)

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European Committee for Electrotechnical Standardization
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European foreword

The text of document 47/2634(F)/FDIS, future edition 3 of IEC 60749-20, prepared by IEC/TC 47 “Semiconductor devices” was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60749-20:2020.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2021-07-05
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2023-10-05

This document supersedes EN 60749-20:2009 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60749-20:2020 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

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60068-2-20	2008	Environmental testing - Part 2–20: Tests - Test T: Test methods for solderability and resistance to soldering heat of devices with leads	EN 60068-2-20	2008
IEC 60749-3	-	Semiconductor devices - Mechanical and climatic test methods - Part 3: External visual examination	EN 60749-3	-
IEC 60749-30	-	Semiconductor devices - Mechanical and climatic test methods - Part 30: Preconditioning of non-hermetic surface mount devices prior to reliability testing	EN IEC 60749-30	-
IEC 60749-35	-	Semiconductor devices - Mechanical and climatic test methods - Part 35: Acoustic microscopy for plastic encapsulated electronic components	EN 60749-35	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –

Part 20: Resistance of plastic encapsulated SMDs to the combined effect of moisture and soldering heat

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. 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 60749-20 has been prepared by IEC technical committee 47: Semiconductor devices.

This third edition cancels and replaces the second edition published in 2008. This edition constitutes a technical revision.

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

a) incorporation of a technical corrigendum to IEC 60749-20:2008 (second edition);
b) inclusion of new Clause 3;
c) inclusion of explanatory notes.

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

FDIS	Report on voting
47/2634/FDIS	47/2646/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.

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SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –

Part 20: Resistance of plastic encapsulated SMDs to the combined effect of moisture and soldering heat

1 Scope

This part of IEC 60749 provides a means of assessing the resistance to soldering heat of semiconductors packaged as plastic encapsulated surface mount devices (SMDs). This test is destructive.

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 60068-2-20:2008, *Environmental testing – Part 2-20: Tests – Test T: Test methods for solderability and resistance to soldering heat of devices with leads*

IEC 60749-3, *Semiconductor devices – Mechanical and climatic test methods – Part 3: External visual examination*

IEC 60749-30, *Semiconductor devices – Mechanical and climatic test methods – Part 30: Preconditioning of non-hermetic surface mount devices prior to reliability testing*

IEC 60749-35, *Semiconductor devices – Mechanical and climatic test methods – Part 35: Acoustic microscopy for plastic encapsulated electronic components*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

3.1
acoustic tomography
determination of the physical qualities of a known substance by measuring how long it takes sound to travel through it

3.2
classification reflow temperature
T_c
maximum body temperature for which the component moisture sensitivity level (MSL) is verified by the component manufacturer and as noted on the caution and/or bar code label

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