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01-september-2009

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Semiconductor devices - Mechanical and climatic test methods - Part 20-1: Handling, packing, labelling and shipping of surface mount devices sensitive to the combined effect of moisture and soldering heat (IEC 60749-20-1:2009)

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Halbleiterbauelemente - Mechanische und klimatische Prüfverfahren - Teil 20-1: Handhabung, Verpackung, Kennzeichnung und Transport oberflächenmontierbarer Bauelemente, die empfindlich gegen die Kombination von Feuchte und Lötwärme sind (IEC 60749-20-1:2009)

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Ta slovenski standard je istoveten z: **EN 60749-20-1:2009**

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Dispositifs à semiconducteurs -
Méthodes d'essais mécaniques
et climatiques -
Partie 20-1: Manipulation, emballage,
étiquetage et transport des composants
pour montage en surface sensibles
à l'effet combiné de l'humidité
et de la chaleur de brasage
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European Committee for Electrotechnical Standardization
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Foreword

The text of document 47/2010/FDIS, future edition 1 of IEC 60749-20-1, prepared by IEC TC 47, Semiconductor devices, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60749-20-1 on 2009-05-01.

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)	2010-02-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2012-05-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60749-20-1:2009 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60749-37 NOTE Harmonized as EN 60749-37:2008 (not modified).

IEC 60749-39 NOTE Harmonized as EN 60749-39:2006 (not modified).

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

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 60749-20	-[1)]	Semiconductor devices - Mechanical and climatic test methods - Part 20: Resistance of plastic encapsulated SMDs to the combined effect of moisture and soldering heat	EN 60749-20	200X[2)]
IEC 60749-30	-[1)]	Semiconductor devices - Mechanical and climatic test methods - Part 30: Preconditioning of non-hermetic surface mount devices prior to reliability testing	EN 60749-30	2005[3)]

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1) Undated reference.
2) To be ratified.
3) Valid edition at date of issue.

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Dispositifs à semiconducteurs – Méthodes d'essais mécaniques et climatiques – Partie 20-1: Manipulation, emballage, étiquetage et transport des composants pour montage en surface sensibles à l'effet combiné de l'humidité et de la chaleur de brasage

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SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –

Part 20-1: Handling, packing, labelling and shipping of surface-mount devices sensitive to the combined effect of moisture and soldering heat

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International Standard IEC 60749-20-1 has been prepared by IEC technical committee 47: Semiconductor devices.

This standard cancels and replaces IEC/PAS 62168 and IEC/PAS 62169 published in 2000. IEC/PAS 62169 was based on a Joint (IPC/JEDEC) Industry Standard. This first edition of IEC 60749-20-1 constitutes a technical revision.

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

FDIS	Report on voting
47/2010/FDIS	47/2013/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.

A list of all the parts in the IEC 60749 series, 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 publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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INTRODUCTION

The advent of surface-mount devices (SMDs) introduced a new class of quality and reliability concerns regarding package damage ‘‘cracks and delamination’’ from the solder reflow process. This document describes the standardized levels of floor life exposure for moisture/reflow-sensitive SMDs along with the handling, packing and shipping requirements necessary to avoid moisture/reflow-related failures. IEC 60749-20 defines the classification procedure and Annex A of this document defines the labelling requirements.

Moisture from atmospheric humidity enters permeable packaging materials by diffusion. Assembly processes used to solder SMDs to printed circuit boards (PCBs) expose the entire package body to temperatures higher than 200 °C. During solder reflow, the combination of rapid moisture expansion, materials mismatch, and material interface degradation can result in package cracking and/or delamination of critical interfaces within the package.

The solder reflow processes of concern are convection, convection/IR, infrared (IR), vapour phase (VPR) and hot air rework tools. The use of assembly processes that immerse the component body in molten solder are not recommended for most SMDs.

This first edition of IEC 60749-20-1 is based principally on IPC/JEDEC J-STD-033 [1] and the permission to use this standard is gratefully acknowledged. It is also based on contributing documents from various national committees.

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1 Refer to Bibliography.