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I.S. EN 62137-1-3:2009

Surface mounting technology - Environmental and endurance test methods for surface mount solder joint -- Part 1-3: Cyclic drop test (IEC 62137-1-3:2008 (EQV))

I.S. EN 62137-1-3:2009

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Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 62137-1-3

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English version

Surface mounting technology - Environmental and endurance test methods for surface mount solder joint - Part 1-3: Cyclic drop test

(IEC 62137-1-3:2008)

Technologie de montage en surface -
Méthodes d'essais d'environnement
et d'endurance des joints brasés
montés en surface -
Partie 1-3: Essai de chute cyclique
(CEI 62137-1-3:2008)

Oberflächenmontage-Technik -
Verfahren zur Prüfung
auf Umgebungseinflüsse
und zur Prüfung der Haltbarkeit
von Oberflächen-Lötverbindungen -
Teil 1-3: Zyklische Fallprüfung
(IEC 62137-1-3:2008)

This European Standard was approved by CENELEC on 2009-02-01. 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, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC
European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 62137-1-3:2009 E

Foreword

The text of document 91/802/FDIS, future edition 1 of IEC 62137-1-3, prepared by IEC TC 91, Electronics assembly technology, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62137-1-3 on 2009-02-01.

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)	2009-11-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2012-02-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62137-1-3:2008 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 60068-2-27	NOTE Harmonized as EN 60068-2-27:200X[1] (not modified).
IEC 60068-2-31	NOTE Harmonized as EN 60068-2-31:2008 (not modified).

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[1] To be ratified.

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 60068-1	-(2)	Environmental testing - Part 1: General and guidance	EN 60068-1	1994(3)
IEC 60194	-(2)	Printed board design, manufacture and assembly - Terms and definitions	EN 60194	2006(3)
IEC 61188-5	Series	Printed boards and printed board assemblies - Design and use - Part 5: Attachment (land/joint) considerations	EN 61188-5	Series
IEC 61190-1-2	-(2)	Attachment materials for electronic assembly - Part 1-2: Requirements for soldering pastes for high-quality interconnects in electronics assembly	EN 61190-1-2	2007(3)
IEC 61192-1	-(2)	Workmanship requirements for soldered electronic assemblies - Part 1: General	EN 61192-1	2003(3)
IEC 61249-2-7	-(2)	Materials for printed boards and other interconnecting structures - Part 2-7: Reinforced base materials, clad and unclad - Epoxide woven E-glass laminated sheet of defined flammability (vertical burning test), copper-clad	EN 61249-2-7 + corr. September	2002(3) 2005
IEC 61760-1	-(2)	Surface mounting technology - Part 1: Standard method for the specification of surface mounting components (SMDs)	EN 61760-1	2006(3)

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(2) Undated reference.

(3) Valid edition at date of issue.

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IEC 62137-1-3

Edition 1.0 2008-11

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Surface mounting technology – Environmental and endurance test methods for surface mount solder joint –
Part 1-3: Cyclic drop test

Technologie de montage en surface – Méthodes d'essais d'environnement et d'endurance des joints brasés montés en surface –
Partie 1-3: Essai de chute cyclique

IEC 62137-1-3:2008

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- Electropedia: www.electropedia.org

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INTERNATIONAL STANDARD

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

SURFACE MOUNTING TECHNOLOGY – ENVIRONMENTAL AND ENDURANCE TEST METHODS FOR SURFACE MOUNT SOLDER JOINT –

Part 1-3: Cyclic drop test

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 62137-1-3 has been prepared by IEC technical committee 91: Electronics assembly technology.

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

FDIS	Report on voting
91/802/FDIS	91/825/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 parts of the IEC 62137 series, under the general title *Surface mounting technology – Environmental and endurance test methods for surface mount solder joint*, 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

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

SURFACE MOUNTING TECHNOLOGY – ENVIRONMENTAL AND ENDURANCE TEST METHODS FOR SURFACE MOUNT SOLDER JOINT –

Part 1-3: Cyclic drop test

1 Scope

The test method described in this part of IEC 62137 applies to solder joints between terminals of surface mounting devices (SMDs) and land patterns on printed wiring boards (PWBs).

This test is intended to evaluate the strength of the solder joints of larger sized multi-terminal components and other components in devices (e.g. handheld mobile devices) in the event that the device is dropped. The properties of the solder joints (e.g. solder alloy, substrate, mounted device or design, etc.) are evaluated to assist in improving the strength of the solder joints.

2 Normative references

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.

IEC 60068-1, *Environmental testing – Part 1: General and guidance*

IEC 60194, *Printed boards design, manufacture and assembly – Terms and definitions*

IEC 61249-2-7, *Materials for printed boards and other interconnecting structures – Part 2-7: Reinforced base materials clad and unclad – Epoxide woven E-glass laminated sheet of defined flammability (vertical burning test), copper-clad*

IEC 61188-5 (all parts 5), *Printed boards and printed board assemblies – Design and use – Part 5: Attachment (land-joint) considerations*

IEC 61190-1-2, *Attachment materials for electronic assembly – Part 1-2: Requirements for soldering pastes for high-quality interconnects in electronics assembly*

IEC 61192-1, *Workmanship requirements for soldered electronic assemblies – Part 1: General*

IEC 61760-1, *Surface mounting technology – Part 1: Standard method for the specification of surface mounting components (SMDs)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60068-1 and IEC 60194, as well as the following definitions, apply.

3.1
drop impact strength
strength of the test substrate held by a jig that is dropped from a specified height, as represented by the number of cyclic drops that finally cause fracture at the intermetallic, the