

<b>STN</b>	<p><b>Vysokofrekvenčné indukčné súčiastky Neelektrické charakteristiky a metódy merania Časť 2: Skúšobné metódy na neelektrické charakteristiky</b></p>	<p><b>STN EN IEC 62025-2</b></p>
		34 5851

High frequency inductive components - Non-electrical characteristics and measuring methods - Part 2: Test methods for non-electrical characteristics

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 03/20

Obsahuje: EN IEC 62025-2:2019, IEC 62025-2:2019

Oznámením tejto normy sa od 25.10.2022 ruší  
STN EN 62025-2 (34 5851) z augusta 2005

**130646**

**EUROPEAN STANDARD**  
**NORME EUROPÉENNE**  
**EUROPÄISCHE NORM**

**EN IEC 62025-2**

November 2019

ICS 29.100.10

Supersedes EN 62025-2:2005 and all of its amendments  
and corrigenda (if any)

English Version

**High frequency inductive components - Non-electrical  
characteristics and measuring methods - Part 2: Test methods  
for non-electrical characteristics  
(IEC 62025-2:2019)**

Composants inductifs à haute fréquence - Caractéristiques  
non électriques et méthodes de mesure - Partie 2:  
Méthodes d'essai pour caractéristiques non électriques  
(IEC 62025-2:2019)

Induktive Hochfrequenzbauelemente - Nichtelektrische  
Eigenschaften und Messmethoden - Teil 2: Messverfahren  
für nichtelektrische Eigenschaften  
(IEC 62025-2:2019)

This European Standard was approved by CENELEC on 2019-10-25. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

**EN IEC 62025-2:2019 (E)****European foreword**

The text of document 51/1273/CDV, future edition 2 of IEC 62025-2, prepared by IEC/TC 51 "Magnetic components, ferrite and magnetic powder materials" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62025-2:2019.

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) 2020-07-25
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-10-25

This document supersedes EN 62025-2:2005 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 62025-2:2019 was approved by CENELEC as a European Standard without any modification.

**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](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-1	-	Environmental testing - Part 1: General EN 60068-1 and guidance		-
IEC 60068-2-6	2007	Environmental testing - Part 2-6: Tests - EN 60068-2-6 Test Fc: Vibration (sinusoidal)		2008
IEC 60068-2-20	-	Environmental testing - Part 2-20: Tests - EN 60068-2-20 Test T: Test methods for solderability and resistance to soldering heat of devices with leads		-
IEC 60068-2-21	2006	Environmental testing - Part 2-21: Tests - EN 60068-2-21 Test U: Robustness of terminations and integral mounting devices		2006
IEC 60068-2-27	-	Environmental testing - Part 2-27: Tests - EN 60068-2-27 Test Ea and guidance: Shock		-
IEC 60068-2-45	1980	Basic environmental testing procedures - EN 60068-2-45 Part 2-45: Tests - Test XA and guidance: Immersion in cleaning solvents		1992
+ A1	1993		+ A1	1993
IEC 60068-2-58	2015	Environmental testing - Part 2-58: Tests - EN 60068-2-58 Test Td: Test methods for solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)		2015
+ A1	2017		+ A1	2018
IEC 60068-2-69	-	Environmental testing – Part 2-69: Tests – EN 60068-2-69 Test Te/Tc: Solderability testing of electronic components and printed boards by the wetting balance (force measurement) method		-
IEC 60068-2-77	-	Environmental testing - Part 2-77: Tests - EN 60068-2-77 Test 77: Body strength and impact shock		-

**EN IEC 62025-2:2019 (E)**

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61188-5-2	-	Printed boards and printed board assemblies - Design and use - Part 5-2: Attachment (land/joint) considerations - Discrete components		-
IEC 61190-1-2	2014	Attachment materials for electronic assembly - Part 1-2: Requirements for soldering pastes for high-quality interconnects in electronics assembly	EN 61190-1-2	2014
IEC 61190-1-3	-	Attachment materials for electronic assembly - Part 1-3: Requirements for electronic grade solder alloys and fluxed and non-fluxed solid solder for electronic soldering applications	IEC 61190-1-3	
IEC 62211	2017	Inductive components – Reliability management	EN 62211	2017



IEC 62025-2

Edition 2.0 2019-09

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**High frequency inductive components – Non-electrical characteristics and measuring methods –  
Part 2: Test methods for non-electrical characteristics**

**Composants inductifs à haute fréquence – Caractéristiques non électriques et méthodes de mesure –  
Partie 2: Méthodes d'essai pour caractéristiques non électriques**





**THIS PUBLICATION IS COPYRIGHT PROTECTED**  
**Copyright © 2019 IEC, Geneva, Switzerland**

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office  
 3, rue de Varembé  
 CH-1211 Geneva 20  
 Switzerland

Tel.: +41 22 919 02 11  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

#### About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

#### About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

##### **IEC publications search - [webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)**

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

##### **IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)**

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

##### **IEC Customer Service Centre - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)**

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: [sales@iec.ch](mailto:sales@iec.ch).

##### **Electropedia - [www.electropedia.org](http://www.electropedia.org)**

The world's leading online dictionary on electrotechnology, containing more than 22 000 terminological entries in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

##### **IEC Glossary - [std.iec.ch/glossary](http://std.iec.ch/glossary)**

67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

#### A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

#### A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

##### **Recherche de publications IEC - [webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)**

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

##### **IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)**

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

##### **Service Clients - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)**

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: [sales@iec.ch](mailto:sales@iec.ch).

##### **Electropedia - [www.electropedia.org](http://www.electropedia.org)**

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 000 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 16 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

##### **Glossaire IEC - [std.iec.ch/glossary](http://std.iec.ch/glossary)**

67 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.



# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

**High frequency inductive components – Non-electrical characteristics and measuring methods –**

**Part 2: Test methods for non-electrical characteristics**

**Composants inductifs à haute fréquence – Caractéristiques non électriques et méthodes de mesure –**

**Partie 2: Méthodes d'essai pour caractéristiques non électriques**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

**Warning! Make sure that you obtained this publication from an authorized distributor.**

**Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

## CONTENTS

FOREWORD .....	4
1 Scope .....	6
2 Normative references .....	6
3 Terms and definitions .....	7
4 Test conditions .....	7
4.1 Standard atmospheric conditions for test .....	7
4.2 Referee conditions .....	7
5 Mechanical characteristics test .....	7
5.1 Body strength test .....	7
5.1.1 Body strength test procedures .....	7
5.1.2 Information to be given in the detail specification .....	9
5.2 Robustness of terminations (electrodes) .....	9
5.2.1 Resistance to bending of printed-circuit board .....	9
5.2.2 Adherence test (see test of Ue <sub>3</sub> of IEC 60068-2-21) .....	13
5.3 Solderability .....	15
5.3.1 General .....	15
5.3.2 Preconditioning .....	15
5.3.3 Initial measurement .....	15
5.3.4 Test method .....	15
5.3.5 Recovery .....	17
5.3.6 Final measurement .....	17
5.3.7 Items to be specified in detail specification .....	17
5.4 Resistance to soldering heat .....	18
5.4.1 General .....	18
5.4.2 Preconditioning .....	18
5.4.3 Initial measurement .....	18
5.4.4 Test method .....	18
5.4.5 Recovery .....	19
5.4.6 Final measurement .....	19
5.4.7 Items to be specified in detail specification .....	19
5.5 Resistance to dissolution of metallization .....	20
5.5.1 General .....	20
5.5.2 Preconditioning .....	20
5.5.3 Initial measurement .....	20
5.5.4 Test methods .....	20
5.5.5 Final measurements .....	20
5.5.6 Items to be specified in detail specification .....	21
5.6 Vibration .....	21
5.6.1 Test equipment .....	21
5.6.2 Preparation .....	21
5.6.3 Test method .....	21
5.6.4 Items to be specified in detail specification .....	21
5.7 Resistance to shock .....	22
5.7.1 Mechanical shock method .....	22
5.7.2 Items to be specified in detail specification .....	22

Annex A (normative) Mounting of surface mounting inductor on test printed-circuit board .....	23
A.1 General.....	23
A.2 Mounting printed-circuit board and mounting land .....	23
A.3 Solder .....	23
A.4 Preparation .....	24
A.5 Preheating .....	24
A.6 Soldering .....	24
A.7 Cleaning .....	24
 Figure 1 – Method for pressurizing the body .....	8
Figure 2 – Pressurizing jig .....	9
Figure 3 – Example of printed-circuit board.....	10
Figure 4 – Layout.....	12
Figure 5 – Pressurizing jig .....	12
Figure 6 – Pressurizing .....	12
Figure 7 – Pressurizing and shape of jig .....	14
Figure 8 – Reflow temperature profile .....	17
 Table 1 – Size of soldering lands according to the code of multi-layer chip inductors .....	10
Table 2 – Thickness of solder paste by the size code of inductors .....	11
Table 3 – Conditions of immersion into solder.....	16
Table 4 – Reflow temperature .....	16
Table 5 – Severity.....	18
Table 6 – Reflow temperature .....	19
Table 7 – Conditions of vibration.....	21

**INTERNATIONAL ELECTROTECHNICAL COMMISSION****HIGH FREQUENCY INDUCTIVE COMPONENTS –  
NON-ELECTRICAL CHARACTERISTICS AND MEASURING METHODS –****Part 2: Test methods for non-electrical characteristics****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.
- 2) The formal decisions or agreements of 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 IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62025-2 has been prepared by IEC technical committee 51: Magnetic components, ferrite and magnetic powder materials.

This second edition cancels and replaces the first edition published in 2005. This edition constitutes a technical revision.

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

- a) revision of Table 5;
- b) revision of normative references.

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

CDV	Report on voting
51/1273/CDV	51/1301/RVC

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 62025 series, published under the general title *High frequency inductive components – Non-electrical characteristics and measuring 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.

# HIGH FREQUENCY INDUCTIVE COMPONENTS – NON-ELECTRICAL CHARACTERISTICS AND MEASURING METHODS –

## Part 2: Test methods for non-electrical characteristics

### 1 Scope

This part of IEC 62025 specifies a test method for the non-electrical characteristics of the surface mounted device (SMD) inductors to be used for electronic and telecommunication equipment. The object of this part of this document is to define methods for measuring mechanical performance only. As the reliability performances and specifications relative to non-electrical performances are defined in IEC 62211, detailed measuring methods for mechanical performance of reliability testing are defined in this document.

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

IEC 60068-2-6:2007, *Environmental testing – Part 2: Tests – Test Fc: Vibration (sinusoidal)*

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

IEC 60068-2-21:2006, *Environmental testing – Part 2-21: Tests – Test U: Robustness of terminations and integral mounting devices*

IEC 60068-2-27, *Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock*

IEC 60068-2-45:1980, *Basic environmental testing procedures – Part 2-45: Tests – Test XA and guidance: Immersion in cleaning solvents*

IEC 60068-2-45:1980/AMD1:1993

IEC 60068-2-58:2015, *Environmental testing – Part 2-58: Tests – Test Td: Test methods for solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)*

IEC 60068-2-58:2015/AMD1:2017

IEC 60068-2-69, *Environmental testing – Part 2-69: Tests – Test Te/Tc: Solderability testing of electronic components and printed boards by the wetting balance (force measurement) method*

IEC 60068-2-77, *Environmental testing – Part 2-77: Tests – Test 77: Body strength and impact shock*

IEC 61188-5-2, *Printed boards and printed board assemblies – Design and use – Part 5-2: Attachment (land/joint) considerations – Discrete components*

IEC 62025-2:2019 © IEC 2019

– 7 –

IEC 61190-1-2:2014, *Attachment materials for electronic assembly – Part 1-2: Requirements for soldering pastes for high-quality interconnections in electronics assembly*

IEC 61190-1-3, *Attachment materials for electronic assembly – Part 1-3: Requirements for electronic grade solder alloys and fluxed and non-fluxed solid solder for electronic soldering applications*

IEC 62211:2017, *Inductive components – Reliability management*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN