

**SLOVENSKI STANDARD  
SIST EN IEC 60738-1:2023****01-januar-2023****Nadomešča:****SIST EN 60738-1:2007****SIST EN 60738-1:2007/A1:2010**

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**Termistorji - Neposredno ogrevani s pozitivnim temperaturnim koeficientom - 1.  
del: Splošna specifikacija (IEC 60738-1:2022)**Thermistors - Directly heated positive temperature coefficient - Part 1: Generic  
specification (IEC 60738-1:2022)Direkt geheizte temperaturabhängige Widerstände mit positivem Temperaturkoeffizienten  
– Teil 1: Fachgrundspezifikation (IEC 60738-1:2022)Thermistances - Coefficient de température positif à chauffage direct - Partie 1:  
Spécification générique (IEC 60738-1:2022)**Ta slovenski standard je istoveten z: EN IEC 60738-1:2022****ICS:**

31.040.30 Termistorji Thermistors

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English Version

**Thermistors - Directly heated positive temperature coefficient -  
Part 1: Generic specification  
(IEC 60738-1:2022)**

Thermistances - Coefficient de température positif à  
chauffage direct - Partie 1: Spécification générique  
(IEC 60738-1:2022)

Direkt geheizte temperaturabhängige Widerstände mit  
positivem Temperaturkoeffizienten - Teil 1:  
Fachgrundspezifikation  
(IEC 60738-1:2022)

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**EN IEC 60738-1:2022 (E)****European foreword**

The text of document 40/2969/FDIS, future edition 4 of IEC 60738-1, prepared by IEC/TC 40 "Capacitors and resistors for electronic equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60738-1:2022.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2023-08-18 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2025-11-18 document have to be withdrawn

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The text of the International Standard IEC 60738-1:2022 was approved by CENELEC as a European Standard without any modification. [SIST EN IEC 60738-1:2023](https://standards.iteh.ai/catalog/standards/sist/12ae71ae-c46a-4664-b565-19c07e352a7/sist-en-iec-60738-1-2023)

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

IEC 60068-2-45:1980 NOTE Harmonized as EN 60068-2-45:1992 (not modified)

## 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 60027	series	Letters symbols to be used in electrical technology	-	series
IEC 60050	series	International Electrotechnical Vocabulary (IEV)	-	-
IEC 60062	-	Marking codes for resistors and capacitors	EN 60062	-
IEC 60068-1	2013	Environmental testing - Part 1: General and guidance	EN 60068-1	2014
IEC 60068-2-1	2007	Environmental testing - Part 2-1: Tests - Test A: Cold	EN 60068-2-1	2007
IEC 60068-2-2	2007	Environmental testing - Part 2-2: Tests - Test B: Dry heat	EN 60068-2-2	2007
IEC 60068-2-6	-	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	-
IEC 60068-2-11	-	Environmental testing - Part 2-11: Tests - Test Ka: Salt mist	EN IEC 60068-2-11	-
IEC 60068-2-13	-	Environmental testing - Part 2-13: Tests - Test M: Low air pressure	EN IEC 60068-2-13	-
IEC 60068-2-14	-	Environmental testing - Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	-
IEC 60068-2-20	-	Environmental testing - Part 2-20: Tests - Test Ta and Tb: Test methods for solderability and resistance to soldering heat of devices with leads	EN IEC 60068-2-20	-
IEC 60068-2-21	-	Environmental testing - Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices	EN IEC 60068-2-21	-
IEC 60068-2-27	-	Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock	EN 60068-2-27	-
IEC 60068-2-30	-	Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)	EN 60068-2-30	-

## EN IEC 60738-1:2022 (E)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-58	-	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)	EN 60068-2-58	-
IEC 60068-2-78	-	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	-
IEC 60294	-	Measurement of the dimensions of a cylindrical component with axial terminations	EN 60294	-
IEC 60617	-	Standard data element types with associated classification scheme for electric components - Part 4: IEC reference collection fo standard data element types and component classes	-	-
IEC 60717	-	Method for the determination of the space required by capacitors and resistors with unidirectional terminations	EN 60717	-
IEC 61193-2	-	Quality assessment systems - Part 2: Selection and use of sampling plans for inspection of electronic components and packages	EN 61193-2	-
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	EN 61249-2-7	-
IEC 61760-1	-	Surface mounting technology - Part 1: Standard method for the specification of surface mounting components (SMDs)	EN IEC 61760-1	-
ISO 80000-1	-	Quantities and units - Part 1: General	EN ISO 80000-1	-



IEC 60738-1

Edition 4.0 2022-10

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**Thermistors – Directly heated positive temperature coefficient –  
Part 1: Generic specification**

**Thermistances – Coefficient de température positif à chauffage direct –  
Partie 1: Spécification générique**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**THERMISTORS – DIRECTLY HEATED POSITIVE  
TEMPERATURE COEFFICIENT –****Part 1: Generic specification**

## 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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IEC 60738-1 has been prepared by IEC technical committee 40: Capacitors and resistors for electronic equipment. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2006 and Amendment 1:2009. This edition constitutes a technical revision.

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

- a) Restructured completely to comply with ISO/IEC Directives; categorization and reorganization of test methods into these categories;
- b) Some wordings, figures and references have been revised.



# THERMISTORS – DIRECTLY HEATED POSITIVE TEMPERATURE COEFFICIENT –

## Part 1: Generic specification

### 1 Scope

This part of IEC 60738 describes terms and methods of test for positive step-function temperature coefficient thermistors, insulated and non-insulated types, typically made from ferro-electric semi-conductor materials.

It establishes standard terms, inspection procedures and methods of test for use in detail specifications for qualification approval and for quality assessment systems for electronic components.

### 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 60027 (all parts), *Letter symbols to be used in electrical technology*

IEC 60050 (all parts), *International Electrotechnical Vocabulary (IEV)* (available at [www.electropedia.org](http://www.electropedia.org))

IEC 60062, *Marking codes for resistors and capacitors*

IEC 60068-1:2013, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-1:2007, *Environmental testing – Part 2-1: Tests – Test A: Cold*

IEC 60068-2-2:2007, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*

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

IEC 60068-2-11, *Environmental testing – Part 2-11: Tests – Test Ka: Salt mist*

IEC 60068-2-13, *Environmental testing – Part 2-13: Tests – Test M: Low air pressure*

IEC 60068-2-14, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*  
Amendment 1 (1986)

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

IEC 60068-2-21, *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*