

SLOVENSKI STANDARD oSIST prEN IEC 60115-4-20:2026

01-februar-2026

Fiksni upori za uporabo v elektronski opremi - 4-20. del: Neizpolnjena podrobna specifikacija - Močnostni upori z aksialnimi priključki za montažo skozi prehodne luknje tiskanih vezij (THT) za visokozmogljivo elektronsko opremo, razvrstitvena raven P, ali za visokozmogljivo in zelo zanesljivo elektronsko opremo, razvrstitvena raven G

Fixed resistors for use in electronic equipment - Part 4-20: Blank detail specification: Power resistors with axial leads for through-hole assembly on circuit boards (THT), for high performance electronic equipment, classification level P, or for high-performance high-reliable electronic equipment, classification level R

(https://standards.iteh.ai) Document Preview

Résistances fixes utilisées dans les équipements électroniques - Partie 4-20: Spécification particulière-cadre: Résistances de puissance à broches axiales pour assemblage par trous traversants sur cartes de circuit imprimé (THT), pour les équipements électroniques de haute performance (niveau de classification P), ou pour les équipements électroniques de haute performance et de haute fiabilité (niveau de classification R)

Ta slovenski standard je istoveten z: prEN IEC 60115-4-20:2025

ICS:

31.040.10 Fiksni upor Fixed resistors

oSIST prEN IEC 60115-4-20:2026 en

iTeh Standards (https://standards.iteh.ai) Document Preview

<u>oSIST prEN IEC 60115-4-20:2026</u>

https://standards.iteh.ai/catalog/standards/sist/9763faec-10ef-4e85-89de-99ab3f748e9c/osist-pren-iec-60115-4-20-2026

oSIST prEN IEC 60115-4-20:2026



40/3265/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

| PROJECT NUMBER: | | | |
|------------------------|--------------------------|--|--|
| IEC 60115-4-20 ED1 | | | |
| DATE OF CIRCULATION: | CLOSING DATE FOR VOTING: | | |
| 2025-12-05 | 2026-02-27 | | |
| SUPERSEDES DOCUMENTS: | | | |
| 40/3207/CD, 40/3248/CC | | | |
| | | | |

| IEC TC 40 : CAPACITORS AND RESISTORS FOR ELECTRONIC EQUIPMENT | | | | |
|--|---|--|--|--|
| SECRETARIAT: | SECRETARY: | | | |
| Netherlands | Mr Ronald Drenthen | | | |
| OF INTEREST TO THE FOLLOWING COMMITTEES: | HORIZONTAL FUNCTION(S): | | | |
| ASPECTS CONCERNED: | | | | |
| Submitted for CENELEC parallel voting | □ NOT SUBMITTED FOR CENELEC PARALLEL VOTING | | | |
| Attention IEC-CENELEC parallel voting eh Standards | | | | |
| The attention of IEC National Committees, members of | | | | |
| CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. | lards.iteh.ai) | | | |
| The CENELEC members are invited to vote through the CENELEC online voting system. | t Preview | | | |
| | | | | |

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any relevant "In Some Countries" clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE:

Fixed resistors for use in electronic equipment - Part 4-20: Blank detail specification: Power resistors with axial leads for through-hole assembly on circuit boards (THT), for high performance electronic equipment, classification level P, or for high-performance high-reliable electronic equipment, classification level R

| PROPOSED STABILITY DATE: 2034 | | |
|-------------------------------|--|--|
| NOTE FROM TC/SC OFFICERS: | | |
| NOTE FROM TC/SC OFFICERS: | | |

Copyright © 2025 International Electrotechnical Commission, IEC. All rights reserved. It is permitted to download this electronic file, to make a copy and to print out the content for the sole purpose of preparing National Committee positions. You may not copy or "mirror" the file or printed version of the document, or any part of it, for any other purpose without permission in writing from IEC.

| 1 | | | CONTENTS | |
|----------|----|-------|--|----|
| 2 | | | | |
| 3 | FC | OREWO | PRD | 5 |
| 4 | 1 | Scop | oe | 11 |
| 5 | 2 | Norm | native references | 12 |
| 6 | 3 | Term | ns and definitions | 13 |
| 7 | 4 | Char | acteristics and ratings | 13 |
| 8 | | 4.1 | General | |
| 9 | | 4.2 | Dimensions | |
| 10 | | 4.3 | Ratings | 15 |
| 11 | | 4.4 | Resistance range and tolerance on resistance | |
| 12 | 5 | Test | s and test severities | |
| 13 | | 5.1 | General | 18 |
| 14 | | 5.2 | Resistance | |
| 15 | | 5.3 | Temperature coefficient of resistance | 19 |
| 16 | | 5.4 | Temperature rise | |
| 17 | | 5.5 | Endurance | |
| 18 | | 5.6 | Endurance at a maximum temperature: UCT | 19 |
| 19 | | 5.7 | Short-term overload | 20 |
| 20 | | 5.8 | Single-pulse high-voltage overload test | 20 |
| 21 | | 5.9 | Periodic-pulse high-voltage overload test | 20 |
| 22 | | 5.10 | Electrostatic discharge (ESD) test | 21 |
| 23 | | 5.11 | Visual examination | |
| 24 | | 5.12 | Gauging of dimensions | 21 |
| 25 | | 5.13 | Detail dimensions | |
| 26 | | 5.14 | Robustness of terminations IEC 60115-4-20:2026 | 22 |
| 27 27 | | 5.15 | Vibration standards/sist/9763faec-10ef-4e85-89de-99ab3f748e9c/osist-pren-iec-0 | 22 |
| 28 | | 5.16 | Rapid change of temperature | 22 |
| 29 | | 5.17 | Rapid change of temperature, ≥ 100 cycles | 22 |
| 30 | | 5.18 | Climatic sequence | 22 |
| 31 | | 5.19 | Damp heat, steady state | 23 |
| 32 | | 5.20 | Solderability, with lead-free solder | |
| 33 | | 5.21 | Solderability, with SnPb solder | |
| 34 | | 5.22 | Resistance to soldering heat | |
| 35 | | 5.23 | Solvent resistance | |
| 36 | | 5.24 | Insulation resistance | |
| 37 | | 5.25 | Voltage proof | |
| 38 | | 5.26 | Flammability | |
| 39 | 6 | Perfo | ormance requirements | |
| 40 | | 6.1 | General | |
| 41 | | 6.2 | Limits for change of resistance at tests | |
| 42 | | 6.3 | Temperature coefficient of resistance | |
| 43 | | 6.4 | Temperature rise | |
| 44 | | 6.5 | Visual examination | |
| 45 | | 6.6 | Solderability | 28 |

6.7

46

| 47 | | 6.8 | Flammability | 29 |
|-----------------|-------|----------|---|------------------------|
| 48 | | 6.9 | Non-linearity | 29 |
| 49 | 7 | Mar | king, packaging and ordering information | 29 |
| 50 | | 7.1 | Marking of the component | 29 |
| 51 | | 7.2 | Packaging | 30 |
| 52 | | 7.3 | Marking of the packaging | 30 |
| 53 | | 7.4 | Ordering information | 30 |
| 54 | 8 | Add | itional information | 30 |
| 55 | | 8.1 | General | 31 |
| 56 | | 8.2 | Storage and Transportation | 31 |
| 57 | | 8.3 | Substrate for assembly | 31 |
| 58 | | 8.4 | Soldering process | 31 |
| 59 | | 8.5 | Use of cleaning agents or solvents | |
| 60 | | 8.6 | Coating or potting after assembly | |
| 61 | 9 | Qua | lity assessment procedures | 32 |
| 62 | | 9.1 | General | |
| 63 | | 9.2 | Qualification approval | |
| 64 | | 9.3 | Maintenance of a qualification approval | |
| 65 | | 9.4 | Sample size for assessment of a failure rate level | |
| 66 | Ar | | (normative) Symbols and abbreviated terms | |
| 67 | | A.1 | Symbols. Item Standards | |
| 68 | | A.2 | Abbreviated terms | 50 |
| 69 | | | (normative) Reference for visual examination | |
| 70 | | | (informative) Application note on | |
| 71 | Bi | bliogra | phy | 53 |
| 72 | | | | |
| / 73 anc | l Fri | gure 1 | Till Outline and dimensions 7.63 face1.0cf4c8580da00ab3f7.48c0c/ocist-premisions | ec-60 13 5-4-20 |
| 74 | Fi | gure 2 | Lead eccentricity of the wire terminations | 15 |
| 75 | Fi | gure 3 | - Length of excessive coating on the wire terminations | 15 |
| 76 | Fi | gure 4 | - Derating curve for power resistors | 16 |
| 77 | | | - 3 rd harmonic ratio requirement A _{3 min} | |
| 78 | | • | · O IIIII | |
| | Т | shlo 1 | - Styles and dimensions | 1.4 |
| 79 | | | • | |
| 80 | | | - Climatic categories | |
| 81 | | | - Ratings | 16 |
| 82 83 | | | - Temperature coefficients, tolerances and resistance ranges of products d to level P, for climatic category / / | 17 |
| 84 85 | | | - Temperature coefficients, tolerances and resistance ranges of products d to level R, for climatic category / / | 18 |
| 86 | Ta | able 6 - | - Short-term overload duration | 20 |
| 87 | | | - Pulse voltage factors for the single-pulse high-voltage overload test | |
| 88 | | | - Pulse voltage factors for the periodic-pulse high-voltage overload test | |
| 89 | | | - ESD test voltages | |
| | | | Number of temperature cycles of the rapid change of temperature test | |
| 90 | | | | |
| 91 | 18 | able 11 | - Additional cycles of the damp heat, cyclic test | ∠3 |

| 92 | Table 12 – Damp heat, steady state test duration | 23 |
|----------|---|----|
| 93 | Table 13 –Limits for change of resistance at tests | 26 |
| 94 | Table 14 – Permitted change of resistance due to the variation of temperature | 27 |
| 95 | Table 15 – Required sample size for qualification of a failure rate level | 35 |
| 96 97 | Table 16 – Sample size for maintenance of a failure rate level based on a 60 % statistical confidence level | 36 |
| 98 99 | Table 17 – Sample size for maintenance of a failure rate level based on a 10 % statistical confidence level | 36 |
| 100 | Table 18 – Test schedule for the qualification approval of power resistors (1 of 5) | 37 |
| 101 | Table 19 – Test schedule for quality conformance inspection of power resistors (1 of 5) | 42 |
| 102 | | |
| 103 | | |

iTeh Standards (https://standards.iteh.ai) Document Preview

<u>oSIST prEN IEC 60115-4-20:2026</u>

https://standards.iteh.ai/catalog/standards/sist/9763faec-10ef-4e85-89de-99ab3f748e9c/osist-pren-iec-60115-4-20-202

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIXED RESISTORS FOR USE IN ELECTRONIC EQUIPMENT -

Part 4-20: Blank detail specification: Power resistors with axial leads for through-hole assembly on circuit boards (THT), for high-performance electronic equipment, classification level P, or for high-performance and high-reliable electronic equipment, classification level R

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.
- 145 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.
- 147 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.
- IEC 60115-4-20 has been prepared by IEC technical committee 40: Capacitors and resistors for electronic equipment. It is an International Standard
- This edition includes the following significant technical changes with respect to the high performance and high reliable previous edition:
- 153 a) it employs the product classification based on application requirements as defined in the generic specification IEC 60115-1:2020;
- b) it permits the specification additional dimensional requirements concerning the eccentricity of termination wires and the coating extending onto wires;