

**Fixed resistors for use in electronic equipment
- Part 1: Generic specification**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 60115-1:2023 sisaldab Euroopa standardi EN 60115-1:2023 ingliskeelset teksti.	This Estonian standard EVS-EN 60115-1:2023 consists of the English text of the European standard EN 60115-1:2023.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
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English Version

Fixed resistors for use in electronic equipment - Part 1: Generic
specification
(IEC 60115-1:2020, modified)

Résistances fixes utilisées dans les équipements
électroniques - Partie 1: Spécification générique
(IEC 60115-1:2020, modifiée)

Festwiderstände zur Verwendung in elektronischen Geräten
- Teil 1: Fachgrundspezifikation
(IEC 60115-1:2020, modifiziert)

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European foreword

This document (EN 60115-1:2023) consists of the text of IEC 60115-1:2020 prepared by IEC/TC 40, "Capacitors and resistors for electronic equipment", together with the common modifications prepared by the CLC TC/40XB, "Resistors".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2024-02-13
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2026-02-13

This document supersedes EN 60115-1:2011 + EN 60115-1:2011/A11:2015.

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

- a) this edition employs a new document structure, where the tests of prior Clause 4 are given in Clauses 6 to 12 now, with an informative Annex ZX providing cross-references for references to the prior revision of this standard;
- b) the terms and definitions have been revised and amended, supplemented by a new section on resistor technologies and a new section on product classification levels;
- c) a new Subclause 4.7 on recommendations for permissible substitutions has been added;
- d) the provisions for packaging, storage and transportation in Subclauses 4.8, 4.9 and 4.10 have been completely revised;
- e) a new Subclause 5.3 on default tolerances for the most common test parameters has been added;
- f) the generic method of measuring resistance, now Subclause 5.6, has been separated from the test for compliance with a prescribed resistance value in 6.1, as a revision of the prior 4.5;
- g) the test for the temperature coefficient of resistance of Subclause 6.2 is a revision of the prior test 4.8, variation of resistance with temperature, where the special concessions for resistors below 10 Ω have been waived;
- h) the single-pulse high-voltage overload test of Subclause 8.2 (prior 4.27) has been completely revised;
- i) the periodic-pulse high-voltage overload test of Subclause 8.3 (prior 4.28) has been revised and a corrected table of severities provided;
- j) the period-pulse overload test of Subclause 8.4 (prior 4.39) has been deprecated and streamlined to only offer the severity historically applied in subordinate specifications;
- k) the Subclauses 9.1 on visual inspection, 9.2 on the gauging of dimensions, and 9.3 on the assessment of detail dimensions (all parts of prior 4.4) have been completely revised;
- l) the tests for robustness of terminations (prior 4.16) have been revised and separated into tests for the robustness of solderable terminations, Subclause 9.5, and tests for the robustness of threaded stud or screw terminations, Subclause 9.6;

- m) the bump test of Subclause 9.9 (prior 4.20) and the shock test of Subclause 9.10 (prior 4.21) have been revised to reflect the merged relevant test standard EN 60068-2-29;
- n) the accelerated damp heat, steady-state test of Subclause 10.5 (prior 4.37) has been amended with an option for a reduced number of bias voltages;
- o) the corrosion test of Subclause 10.6 has been completely revised in order to employ the better suitable test method of EN 60068-2-52 instead of the prior used EN 60068-2-11;
- p) the whisker growth test of 10.7 has been revised to reflect the changes of the new revision of the test methods of EN IEC 60068-2-82;
- q) the test methods for solderability of Subclause 11.1 (prior 4.17) and for resistance to soldering heat of Subclause 11.2 (prior 4.18) have been completely revised to incorporate the necessary option for the variety of lead-bearing and lead-free solder alloys and respective process conditions;
- r) the solvent resistance test of 11.3 combines the prior tests 4.29, component solvent resistance, and 4.30, solvent resistance of marking, in one test;
- s) the accidental overload test of Subclause 12.3 (prior 4.26) has been completely revised.

Preceding documents on the subject covered by this specification have been:

- EN 60115-1:2001 + EN 60115-1:2001/A1:2001 + EN 60115-1:2001/A11:2007
- EN 140000:1993-12
- CECC 40 000:1973-00, 1979-00.

Clauses, subclauses, annexes, notes, tables and figures which are additional to those in IEC 60115-1:2020 are prefixed "Z".

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Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

1 Modification to the Introduction

Add the following new paragraph after the existing first paragraph:

“The explanation given in this introduction uses IEC documents as examples. Anyhow, the same principles apply in unison to respective documents with EN or EN IEC prefix.”

2 Modification to Clause 1

Replace the first paragraph with the following:

“This part of EN 60115 is a generic specification and is applicable to fixed resistors for use in electronic equipment.”

3 Modification to Clause 2

3.1 Modify the normative reference to IECQ 03-1:2018 as follows:

IECQ 03-1:2020, *IEC Quality Assessment System for Electronic Components (IECQ System) – Rules of procedure — Part 1: General Requirements for all IECQ Schemes*

3.2 Add the following two entries:

IECQ 03-3:2018, *IEC Quality Assessment System for Electronic Components (IECQ System) – Rules of Procedure – Part 3: IECQ Approved Component Products, Related Materials and Assemblies Scheme*

IECQ 03-3-1:2018, *IEC Quality Assessment System for Electronic Components (IECQ System) – Rules of Procedure – Part 3-1: IECQ Approved Component Products, Related Materials and Assemblies Scheme, IECQ Approved Component – Technology Certification (IECQ AC-TC)*

4 Modification to Clause 5

In 5.1, replace the 4th paragraph with the following:

“The performance requirements prescribed by any relevant specification are absolute limits. The policy on uncertainty of measurements and inset limits, as given in IECQ 03-1:2020, Annex C, shall be applied.”

5 Modification to Clause 9

Replace the 1st paragraph in 9.2.2.1, as well as the 1st paragraph in 9.3.2.1, with the following:

“The limiting dimensions are generally prescribed as absolute limits. The policy on inset limits in accordance with IECQ 03-1:2020, Annex C, shall be applied to the preparation of gauges or other representations of the required acceptance windows.”

6 Modification to Annex B

Replace Annex B with the following:

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