IEC 60115-2

Edition 4.0 2023-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Fixed resistors for use in electronic equipment –
Part 2: Sectional specification: Low-power film resistors with leads for through-hole assembly on circuit boards (THT)

Résistances fixes utilisées dans les équipements électroniques –
Partie 2: Spécification intermédiaire: Résistances à broches à couche, à faible dissipation, pour assemblage par trous traversants sur cartes de circuit imprimé (carte THT)



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FIXED RESISTORS FOR USE IN ELECTRONIC EQUIPMENT –

Part 2: Sectional specification: Low-power film resistors with leads for through-hole assembly on circuit boards (THT)

FOREWORD

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IEC 60115-2 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 2014. This edition constitutes a technical revision.

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

a) the definitions of product technologies and product classification levels of the generic specification, IEC 60115-1:2020, have been adopted;
b) the preferred dimensions given in Table 1 have been reviewed, and the legacy style RA_0922 has been removed;
c) a basis for the optional specification of the lead eccentricity of axial leaded resistors has been amended in 4.2;

d) the 'period-pulse high-voltage overload test' of IEC 60115-1:2020, 8.3 has been adopted as default test method in 5.3.8, thereby replacing the legacy test 'periodic-pulse overload test' of IEC 60115-1:2020, 8.4;

e) the revised solderability test of IEC 60115-1:2020, 11.1 has been adopted in 5.3.19 and 5.3.20;

f) the combined solvent resistance test of IEC 60115-1:2020, 11.3 has been adopted in 5.3.22;

g) the 'endurance at room temperature test' of IEC 60115-1:2020, 7.2 (prior IEC 60115 2:2014, Annex C) has been adopted as an optional test in 5.4.1;

h) the 'single-pulse high-voltage overload test' of IEC 60115 1:2020, 8.2, applied with the pulse shape 10/700 in 5.3.7, is complemented with the optional alternative provided by the pulse shape 1,2/50 in 5.4.2;

i) climatic tests for 'operation at low temperature' of IEC 60115-1:2020, 10.2, and for 'damp heat, steady state, accelerated' of IEC 60115-1:2020, 10.5, have been adopted as optional tests in 5.4.4 and 5.4.5, respectively;

j) new guidance is provided in 6.2 on the presentation of stability requirements with their permissible absolute and relative deviations;

k) acceptance criteria for the visual examination have been added in 6.5 and in Annex B;

l) visual examination for the primary and proximity packaging has been added in 6.5.2 and in 7.2;

m) the periodical evaluation of termination platings has been added as a new topic of quality assessment in 9.8;

n) the revised test clause numbering of IEC 60115-1:2020 has been applied;

o) a new Annex C has been added to summarize workmanship requirements for the assembly of leaded film resistors, e.g. as given in the prior IEC 61192 series of standards;

p) the informative Annex F (prior Annex B) on radial formed styles has been amended with details on a formed Z-bend style for surface-mount assembly.

The text of this International Standard is based on the following documents:

Draft	Report on voting
40/2943/CDV	40/3001/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

A list of all parts in the IEC 60115 series, published under the general title *Fixed resistors for use in electronic equipment*, can be found on the IEC website.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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FIXED RESISTORS FOR USE IN ELECTRONIC EQUIPMENT –

Part 2: Sectional specification: Low-power film resistors with leads for through-hole assembly on circuit boards (THT)

1 Scope

This part of IEC 60115 is applicable to fixed low-power film resistors with termination leads for use in electronic equipment, which are typically assembled in through-hole technology (THT) on circuit boards.

These resistors are typically described according to types (different geometric shapes) and styles (different dimensions) and product technology. The resistive element of these resistors is typically protected by a conformal lacquer coating. These resistors have wire terminations and are primarily intended to be mounted on a circuit board in through-hole technique.

The object of this document is to state preferred ratings and characteristics and to select from IEC 60115-1 the appropriate quality assessment procedures, tests and measuring methods and to give general performance requirements for this type of resistor.

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 60062:2016, *Marking codes for resistors and capacitors*

IEC 60063:2015, *Preferred number series for resistors and capacitors*

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

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

IEC 60068-2-20:2021, *Environmental testing – Part 2-20: Tests – Test Ta and Tb – Test methods for solderability and resistance to soldering heat of devices with leads*

IEC 60115-1:2020, *Fixed resistors for use in electronic equipment – Part 1: Generic specification*

IEC 60286-1, *Packaging of components for automatic handling – Part 1: Tape packaging of components with axial leads on continuous tapes*

IEC 60294:2012, *Measurement of the dimensions of a cylindrical component with axial terminations*

IEC 60301, *Preferred diameters of wire terminations of capacitors and resistors*

IEC 61193-2:2007, *Quality assessment systems – Part 2: Selection and use of sampling plans for inspection of electronic components and packages*