IEC 60115-2-10

Edition 1.0 2023-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Fixed resistors for use in electronic equipment – Part 2-10: Blank detail specification: Low-power film resistors with leads for through-hole assembly on circuit boards (THT), for general electronic equipment, classification level G

Résistances fixes utilisées dans les équipements électroniques – Partie 2-10: Spécification particulière-cadre: Résistances à broches à couche, à faible dissipation, pour assemblage par trous traversants sur cartes de circuit imprimé (carte THT) pour des équipements électroniques généraux, niveau de classification G



IEC 60115-2-10:2023-02(en-fr)



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FIXED RESISTORS FOR USE IN ELECTRONIC EQUIPMENT –

Part 2-10: Blank detail specification: Low-power film resistors with leads for through-hole assembly on circuit boards (THT), for general electronic equipment, classification level G

FOREWORD

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IEC 60115-2-10 has been prepared by IEC technical committee 40: Capacitors and resistors for electronic equipment. It is an International Standard.

This first edition cancels and replaces IEC 60115-2-1:1982. This edition constitutes a technical revision.

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

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 of additional dimensional requirements concerning the eccentricity of termination wires and the coating extending onto wires;
c) it provides for a tabulated presentation of resistance ranges in relationship to the temperature coefficient and the tolerance;

d) it supports solderability testing for both traditional lead-bearing soldering and up-to-date lead-free soldering, as required;

e) it introduces a test for the specimens' robustness to electrostatic discharge;

f) it introduces a test for the specimens' resistance to solvents;

g) it introduces a test for the flammability of the specimens;

h) it employs consistent stability requirements grouped in stability classes;

i) it supports the provision of detailed visual acceptance criteria;

j) it includes the requirement for a visual examination of the primary and proximity packaging;

k) it provides the correlated test schedules for a qualification approval and for subsequent quality conformance inspections side by side;

l) it employs quality assessment procedures which meet the requirements of a zero-defect approach, which evades the use of historic AQL levels and the permission of non-conforming specimens in test groups;

m) it provides for the inclusion of specific visual acceptance criteria, to be applied in addition to those given in Annex B of the sectional specification IEC 60115-2:2023;

n) it provides for the optional coverage of 0 Ω resistors (jumpers) within the scope of the drafted detail specification;

o) furthermore, it employs a new document structure, for which a transition guidance is provided in Annex X.

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

Draft	Report on voting
40/2944/CDV	40/3002/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.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under 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.

0 Introduction to the template provided by this blank detail specification

COMMENT This introduction is not intended to be copied into the drafted detail specification. Therefore, it is positioned in front of the conventional document structure and clause numbering range. It nevertheless contains normative requirements to the drafted detail specification.

0.1 Scope of this blank detail specification

This part of IEC 60115-2 is applicable to the drafting of detail specifications for low-power film resistors with leads, classified to level G, based on the definition of the product classification levels in IEC 60115-1:2020, 3.4.

Another part of IEC 60115-2 provides a separate blank detail specification for the drafting of detail specifications for low-power film resistors with leads, classified to level P and to level R.

Yet other parts of IEC 60115-2 may be issued to provide blank detail specifications for the drafting of detail specifications for low-power film resistors with leads, of other technologies or of other classification levels.

0.2 Function of this blank detail specification

A blank detail specification is a supplementary document to the sectional specification and contains requirements for style, layout and minimum contents of detail specifications. Detail specifications not complying with these requirements shall not be accepted as being in accordance with IEC specifications nor shall they be described as such.

Detail specifications complying with the requirements of this blank detail specification are a legitimate basis for the quality assessment of leaded fixed low-power film resistors under an adequate quality assessment system, e.g. the IEC Quality Assessment System for Electronic Components (IECQ System), whereas the plain blank detail specification is not a suitable basis.

The detail specification should contain a table of contents prior the first page of the actual specification.

In the preparation of the detail specification, the content of IEC 60115-2:2023, 8.2 shall be taken into account. The detail specification should be written by using the preferred values given in IEC 60115-2.

Units, graphical symbols and letter symbols shall, whenever possible, be taken from those specified in the following standards:

– IEC 60027-1, *Letter symbols to be used in electrical technology – Part 1: General*
– IEC 60617, *Graphical symbols for diagrams*
– IEC 80000 (all parts), *Quantities and units*
– ISO 80000 (all parts), *Quantities and units*

This blank detail specification uses for its purpose two different kinds of notes:

– NOTE For notes which give additional information intended to assist the understanding or use of the resulting document and therefore shall be copied as NOTE into the drafted detail specification. As outlined in the ISO/IEC directives, these notes shall not contain any requirement, instruction, recommendation or permission.
– COMMENT For editorial notes which are intended to aid and direct the specification writer and therefore shall not be copied into the drafted detail specification. In order to accomplish their function, editorial notes require the use of instructions, recommendations and permissions addressed to the writer of the detail specification.

0.3 Identification of the detail specification and the resistor

The first page of the detail specification should have a layout starting with a title block as recommended on the following page.

The numbers in square brackets are editorial references, which are not intended to be copied into the drafted detail specification, and which correspond to the following information on the contents which shall be inserted in the indicated fields.

[1] The name of the standardisation organisation under whose authority the detail specification is published and, if applicable, the organization from whom the detail specification is available.

[2] The number allocated to the detail specification by the IEC or by the responsible standardisation organisation, together with the date of issue and issue number, as applicable. Further reference details required by the responsible standardisation organisation or quality assessment system may be given here, including an established mark of conformity, as applicable.

[3] The number and issue date and number, as applicable, of the relevant generic specification, sectional specification and blank detail specification, where the referenced issues shall be the most recent issues of the respective specifications.

[4] The title of the detail specification, providing a short description of the type of resistors.

This entry should support the discrimination between similar specifications and should be suitable for an entry in a register of approvals or in a catalogue of standards. It may duplicate information given in fields [6] and [7] and in the textual scope in Clause 1.

[5] An outline drawing or illustration of the products. This entry should aid the easy recognition of the specified resistors and, if possible, support the discrimination between similar specifications. It may duplicate information given in Figure 1.

[6] Information on the typical construction of the resistors (where applicable), information of the specified resistors being insulated or non-insulated (see IEC 60115-1:2020, 3.1.7), and information on compatibility with a specific soldering process (if applicable, see 8.4). This entry may duplicate information given in the textual scope in Clause 1.

[7] The classification level of the resistors covered by this detail specification, the level of quality assessment (Assessment level EZ), and the general level of stability requirements at performance tests (Stability class).

This information may duplicate information given in the textual scope in Clause 1.

[8] Optional field for table notes.

[9] Statement(s) about the availability of information on components qualified to this detail specification, if applied within a full quality assessment system.

Example for the use within the IECQ system:

Information about components qualified to this detail specification is available in the approvals section of the website http://www.iecq.org.

Specification available from: [1]	**IEC 60115-2-10xx:20yy** [2]
Electronic components of assessed quality in accordance with: Generic specification: IEC 60115-1:2020 [3] Sectional specification: IEC 60115-2:2023 Blank detail specification: IEC 60115-2-10:2023	
FIXED RESISTORS FOR USE IN ELECTRONIC EQUIPMENT – **Part 2-10xx: Detail specification –** **Low-power film resistors with leads for through-hole assembly on circuit boards (THT), for general electronic equipment, classification level G,** [4]	
[5]	Technology … [6] Insulated / Non-insulated
	Product classification level G Assessment level EZ [7] Stability classes ...
[8]	

COMMENT The remainder of this page is intentionally left empty in order to start Clause 1 on top of the next page.

Information about components qualified to this detail specification is available ….. [9]

FIXED RESISTORS FOR USE IN ELECTRONIC EQUIPMENT –

Part 2-10: Blank detail specification: Low-power film resistors with leads for through-hole assembly on circuit boards (THT), for general electronic equipment, classification level G

1 Scope

COMMENT The text of this clause may repeat information already given in some fields of the above title block. Essential information on the special type of components covered by the drafted detail specification may be added, preferably at the place marked with "...".

This detail specification specifies the characteristics and ratings of low-power film resistors with leads for use in electronic equipment, which are typically assembled in through-hole technology (THT) on circuit boards.

...

The resistors covered herein are classified to level G, as defined in IEC 60115-1:2020, 3.4 for general electronic equipment, typically operated under benign or moderate environmental conditions, where the major requirement is function. Examples for level G include consumer products and telecommunication user terminals.

This detail specification is based upon the blank detail specification IEC 60115-2-10:2023.

This detail specification establishes test schedules and performance requirements permitting the quality assessment of the resistors covered herein according to the quality assessment procedures specified by IEC 60115-1:2020, Annex Q.

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, *Marking codes for resistors and capacitors*

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

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

IEC 60115-2:2023, Fi*xed resistors for use in electronic equipment – Part 2: Sectional specification – Low-power film resistors with leads for through-hole assembly on circuit boards (THT)*

IEC 60115-2-10:2023, *Fixed resistors for use in electronic equipment – Part 2-10: Blank detail specification –Low-power film resistors with leads for through-hole assembly on circuit boards (THT), for general electronic equipment, classification level G*

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