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Fasta motstånd för elektronikutrustningar – Del 2: Grupp-specifikation för metall- och kolfilmsmotstånd för låg effekt, för hålmontering

Fixed resistors for use in electronic equipment –

Part 2: Sectional specification: Leaded fixed low power film resistors

Som svensk standard gäller europastandarden EN 60115-2:2015. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60115-2:2015.

Nationellt förord

Europastandarden EN 60115-2:2015

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 60115-2, Third edition, 2014 - Fixed resistors for use in electronic equipment - Part 2: Sectional specification: Leaded fixed low power film resistors**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 140100, utgåva 2, 2008, gäller ej fr o m 2017-12-15.

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English Version

Fixed resistors for use in electronic equipment - Part 2:
Sectional specification: Leaded fixed low power film resistors
(IEC 60115-2:2014 , modified)

Résistances fixes utilisées dans les équipements
électroniques - Partie 2: Spécification intermédiaire:
Résistances fixes à broches à couches, à faible dissipation
(IEC 60115-2:2014 , modifiée)

Festwiderstände zur Verwendung in Geräten der Elektronik
- Teil 2: Rahmenspezifikation - Verbleite niedrig belastbare
Schichtwiderstände
(IEC 60115-2:2014 , modifiziert)

This European Standard was approved by CENELEC on 2014-12-15. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

This document (EN 60115-2:2015) has been prepared by 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) 2015-12-15
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2017-12-15

This document supersedes EN 140100:2008.

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 60115-2:2014 are prefixed "Z".

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When 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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60062	2004	Marking codes for resistors and capacitors	EN 60062 + corrigendum Jan.	2005 2007
IEC 60068-1	2013	Environmental testing - Part 1: General and guidance	EN 60068-1	2014
IEC 60068-2-1	-	Environmental testing - Part 2-1: Tests - Test A: Cold	EN 60068-2-1	-
IEC 60068-2-2	-	Environmental testing - Part 2-2: Tests - Tests B: Dry heat	EN 60068-2-2	-
IEC 60068-2-6	2007	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	2008
IEC 60068-2-20	2008	Environmental testing - Part 2-20: Tests – Test T – Test methods for solderability and resistance to soldering heat of leaded devices	EN 60068-2-20	2008
IEC 60115-1 (mod.)	2008	Fixed resistors for use in electronic equipment - Part 1: Generic specification	EN 60115-1	2011
IEC 60286-1	-	Packaging of components for automatic handling - Part 1: Tape packaging of components with axial leads on continuous tapes	EN 60286-1	-
IEC 60294	2012	Measurement of the dimensions of a cylindrical component having two axial terminations	EN 60294	2012
IEC 60301	-	Preferred diameters of wire terminations of capacitors and resistors	EN 60301	-
IEC 61193-2	2007	Quality assessment systems – Part 2: Selection and use of sampling plans for inspection of electronic components and packages	EN 61193-2	2007
IEC 61760-1	2006	Surface mounting technology – Part 1: Standard method for the specification of surface mounting components (SMDs)	EN 61760-1	2006

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIXED RESISTORS FOR USE IN ELECTRONIC EQUIPMENT –**Part 2: Sectional specification:
Leaded fixed low power film resistors**

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

This third edition cancels and replaces the second edition, published in 1982, and it constitutes a technical revision.

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

- it includes test conditions and requirements for lead-free soldering and assessment procedures meeting the requirements of a "zero defect" approach;
- it introduces a product classification based on application requirements;
- it includes an extension of the list of styles and dimensions;
- it includes the use of an extended scope of stability class definitions;
- it includes the extension of the lists of preferred values of ratings;

- it includes test conditions and requirements for lead-free soldering, for periodic overload and for resistance to electrostatic discharge (ESD);
- it includes a new set of severities for a shear test;
- it includes definitions for a test board;
- it includes the replacement of assessment level E and possible others by the sole assessment level EZ, meeting the requirements of a “zero defect” approach;
- it includes an extended endurance test, a flammability test, a temperature rise test, vibration tests, an extended rapid change of temperature test, and a single pulse high-voltage overload test;
- it includes requirements applicable to 0 Ω resistors (jumpers);
- it includes recommendations for the denomination, description, packaging and quality assessment of radial formed styles;
- it includes prescriptions for endurance testing at room temperature, supplementary to the rulings of IEC 60115-1.

The text of this standard is based on the following documents:

FDIS	Report on voting
40/2282/FDIS	40/2289/RVD

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

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 publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

FIXED RESISTORS FOR USE IN ELECTRONIC EQUIPMENT –

Part 2: Sectional specification: Leaded fixed low power film resistors

1 Scope

This part of IEC 60115 is applicable to leaded fixed low-power film resistors for use in electronic equipment.

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 standard is to prescribe 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, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60062:2004, *Marking codes for resistors and capacitors*

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

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

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

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

IEC 60068-2-20:2008, *Environmental testing – Part 2-20: Tests – Test T: Test methods for solderability and resistance to soldering heat of devices with leads*

IEC 60115-1:2008, *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*

IEC 61760-1:2006, *Surface mounting technology – Part 1: Standard method for the specification of surface mounting components (SMDs)*