



NSAI
Standards

Irish Standard
I.S. EN 60115-8-1:2015

Fixed resistors for use in electronic equipment - Part 8-1: Blank detail specification: Fixed surface mount (SMD) low power film resistors for general electronic equipment, classification level G

I.S. EN 60115-8-1:2015

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:

EN 60115-8-1:2015

Published:

2015-05-22

This document was published under the authority of the NSAI and comes into effect on:

2015-06-09

ICS number:

NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD

EN 60115-8-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2015

ICS 31.040.10

English Version

Fixed resistors for use in electronic equipment - Part 8-1: Blank detail specification: Fixed surface mount (SMD) low power film resistors for general electronic equipment, classification level G (IEC 60115-8-1:2014 , modified)

Résistances fixes utilisées dans les équipements électroniques - Partie 8-1: Spécification particulière cadre: Résistances fixes à couche et à faible dissipation pour montage en surface (CMS), pour les équipements électroniques universels, niveau G de classification (IEC 60115-8-1:2014 , modifiée)

Festwiderstände zur Verwendung in Geräten der Elektronik - Teil 8-1: Vordruck für Bauartspezifikation - Oberflächenmontierbare (SMD) Schicht-Festwiderstände niedriger Belastbarkeit für Geräte der Elektronik, Klassifikationsstufe G (IEC 60115-8-1:2014 , modifiziert)

This European Standard was approved by CENELEC on 2015-03-30. 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

The text of document 40/2297/FDIS, future edition 2 of IEC 60115-8-1, prepared by IEC/TC 40 "Capacitors and resistors for electronic equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60115-8-1:2015.

A draft amendment, which covers common modifications to IEC 60115-8-1 (40/2297/FDIS), was prepared by CLC/TC 40XB "Resistors" and approved by CENELEC.

The following dates are fixed:

- latest date by which this document has to be implemented (dop) 2016-03-30
at national level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with (dow) 2018-03-30
this document have to be withdrawn

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 60115-8-1:2014 are prefixed "Z".

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60115-8-1:2014 was approved by CENELEC as a European Standard with agreed common modifications.

1 Modification to the Introduction

After the comment, **add** the following note:

NOTE The readers of this European Standard are advised of the corresponding European documents listed in the normative Annex ZA, which take precedence over the International Standards listed in this clause. The precedence also applies to all informative and normative references made within this document.

2 Modification to 0.1

At the end of the 2nd paragraph, **replace** “to level P.” by “to level P or to level R.”.

3 Modification to 0.2

At the end of the 1st paragraph, **replace** “IEC specifications” by “CENELEC specifications”.

4 Modifications to 0.3

In list item [1], **replace** “International Electrotechnical Commission” by “CENELEC”.

In list item [2], **replace** “IEC” by “CENELEC”.

5 Modification to Clause 2

After the 1st paragraph, **add** the following note:

NOTE The readers of this European Standard are advised of the corresponding European documents listed in the normative Annex ZA, which take precedence over the International Standards listed in this clause. The precedence also applies to all normative references made within this document.

6 Modification to Clause 3

After the 1st paragraph, **add** the following entry and note to entry:

3.1

nominal resistance

R_n

resistance value for which the resistor has been designed, and which is generally used for denomination of the resistor

Note 1 to entry: The definition of nominal resistance, R_n , is identical to the definition of rated resistance, R_r , in EN 60115-1:2011. Therefore nominal resistance, R_n , may be applied wherever rated resistance, R_r , is required, e.g. in a quality assessment scheme.

Replace the comment by

COMMENT Any further terms and definitions may be added, if required by the drafted detail specification.

7 Modification to 4.3

Replace the 2nd paragraph by

The upper category temperature (UCT), which is used for test procedures, shall be the same as the maximum element temperature (MET).

8 Modification to 5.13

Replace the entry for the solvent temperature by

$$g_{\text{bath}} = (50_{-5}^0) \text{ } ^\circ\text{C}$$

9 Modification to 5.14

Replace the entry for solvent temperature by

$$g_{\text{bath}} = (50_{-5}^0) \text{ } ^\circ\text{C}$$

10 Modification to 6.4

Replace the explanation for MET by

MET is the maximum element temperature, MET = UCT.

11 Modifications to Table 12

In Group 11, Test 4.29, **replace** " $T_{\text{bath}} = (23 \pm 5) \text{ } ^\circ\text{C}$ " by " $g_{\text{bath}} = (50_{-5}^0) \text{ } ^\circ\text{C}$ "

In Group 11, Test 4.30,

replace " $T_{\text{bath}} = (23 \pm 5) \text{ } ^\circ\text{C}$ " by " $g_{\text{bath}} = (50_{-5}^0) \text{ } ^\circ\text{C}$ "

replace "cotton wool" by "..."

12 Modifications to Table 13

In Group E, Test 4.29, **replace** " $T_{\text{bath}} = (23 \pm 5) \text{ } ^\circ\text{C}$ " by " $g_{\text{bath}} = (50_{-5}^0) \text{ } ^\circ\text{C}$ "

In Group E, Test 4.30:

replace " $T_{\text{bath}} = (23 \pm 5) \text{ } ^\circ\text{C}$ " by " $g_{\text{bath}} = (50_{-5}^0) \text{ } ^\circ\text{C}$ "

replace "cotton wool" by "..."

13 Modifications to B.1

In the list of letter symbol explanations, **add** the new entry after the entry for R_n :

R_r	Rated resistance, $R_r = R_n$	Ω
-------	-------------------------------	----------

In the list of letter symbol explanations, **replace** the respective entries for temperature by

ϑ	Temperature, e.g. as an atmospheric condition for testing (also written as T)	$^{\circ}\text{C}$
ϑ_A	Low temperature of a change of temperature test (also written as T_A)	$^{\circ}\text{C}$
ϑ_B	High temperature of a change of temperature test (also written as T_B)	$^{\circ}\text{C}$
ϑ_{amb}	Ambient temperature (also written as T_{amb})	$^{\circ}\text{C}$
ϑ_{bath}	Bath temperature, e.g. in solvent resistance or solder bath tests (also written as T_{bath})	$^{\circ}\text{C}$
ϑ_{max}	Maximum temperature, maximum element temperature (also written as T_{max})	$^{\circ}\text{C}$
$\Delta\vartheta$	Temperature rise (also written as ΔT)	K
$\Delta\vartheta_{\text{max}}$	Maximum permissible temperature rise (also written as ΔT_{max})	K

14 Modifications to Annex X

Delete Annex X "Cross-reference for references to the prior revision of this specification".

Add the following Annex ZA on correspondences for normative references.

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. 2007	2005 2007
IEC 60063	-	Preferred number series for resistors and capacitors	EN 60063	-
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 - Test B: Dry heat	EN 60068-2-2	-
IEC 60115-1 (mod)	2008	Fixed resistors for use in electronic equipment -	EN 60115-1	2011
-	-	Part 1: Generic specification	+ A11	2015
IEC 60115-8 (mod)	2009	Fixed resistors for use in electronic equipment - Part 8: Sectional specification - Fixed surface mount resistors	EN 60115-8	2012
IEC 60286-3	-	Packaging of components for automatic handling - Part 3: Packaging of surface mount components on continuous tapes	EN 60286-3	-
IEC 60286-6	-	Packaging of components for automatic handling - Part 3: Bulk case packaging for surface mount components	EN 60286-6	-
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	-	Surface mounting technology - Part 1: Standard method for the specification of surface mounting components (SMDs)	EN 61760-1	-

Replace the Bibliography by the following Bibliography providing references to European Standards.

Bibliography

The following referenced documents are useful for the application of this document, in addition to those listed in Clause 2 as normative references. Many of the documents listed in this bibliography are normative references to a document referenced in this specification; hence a possible dated reference therein takes precedence over the undated entry in this bibliography. When there is no such requirement for a dated reference, the latest edition of the referenced document (including any amendment) applies.

EN 60027-1, *Letter symbols to be used in electrical technology - Part 1: General* (IEC 60027-1)

EN 60060-1, *High-voltage test techniques - Part 1: General definitions and test requirements* (IEC 60060-1)

EN 60068-1, *Environmental testing - Part 1: General and guidance* (IEC 60068-1)

EN 60068-2-1:1993 ¹⁾, *Environmental testing - Part 2: Tests - Tests A: Cold* (IEC 60068-2-1:1990)

EN 60068-2-2:1993 ²⁾, *Basic environmental testing procedures - Part 2: Tests - Tests B: Dry heat* (IEC 60068-2-2:1974 + IEC 60068-2-2A:1976)

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

EN 60068-2-13, *Environmental testing - Part 2: Tests - Test M: Low air pressure* (IEC 60068-2-13)

EN 60068-2-14, *Environmental testing - Part 2-14: Tests - Test N: Change of temperature* (IEC 60068-2-14)

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

EN 60068-2-21, *Environmental testing - Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices* (IEC 60068-2-21)

EN 60068-2-30, *Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)* (IEC 60068-2-30)

EN 60068-2-45, *Environmental testing - Part 2: Tests - Test Xa and guidance: Immersion in cleaning solvents* (IEC 60068-2-45)

EN 60068-2-58, *Environmental testing - Part 2-58: Tests - Test Td - Test methods for solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)* (IEC 60068-2-58)

EN 60068-2-78, *Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state* (IEC 60068-2-78)

EN 60195 ³⁾, *Method of measurement of current noise generated in fixed resistors* (IEC 60195 ⁴⁾)

EN 60440, *Method of measurement of non-linearity in resistors* (IEC 60440)

1) Replaced by EN 60068-2-1:2007 (IEC 60068-2-1:2007, sixth edition).

2) Replaced by EN 60068-2-2:2007 (IEC 60068-2-2:2007, fifth edition).

3) At draft stage.

EN 60115-8-1:2015

- 8 -

EN 60617, *Graphical symbols for diagrams* (IEC 60617)

EN 60695-11-5, *Fire hazard testing - Part 11-5: Test flames - Needle-flame test method - Apparatus, confirmatory test arrangement and guidance* (IEC 60695-11-5)

EN 61340-3-1, *Electrostatics - Part 3-1: Methods for simulation of electrostatic effects - Human body model (HBM) electrostatic discharge test waveforms* (IEC 61340-3-1)

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

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

EN 80000 (series), *Quantities and units* (IEC 80000, series)

EN ISO 80000 (series), *Quantities and units* (ISO 80000, series)



IEC 60115-8-1

Edition 2.0 2014-10

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Fixed resistors for use in electronic equipment –
Part 8-1: Blank detail specification: Fixed surface mount (SMD) low power film
resistors for general electronic equipment, classification level G**

**Résistances fixes utilisées dans les équipements électroniques –
Partie 8-1: Spécification particulière cadre: Résistances fixes à couche et à faible
dissipation pour montage en surface (CMS), pour les équipements électroniques
universels, niveau G de classification**



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2014 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in 14 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

More than 55 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Catalogue IEC - webstore.iec.ch/catalogue

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

Recherche de publications IEC - www.iec.ch/searchpub

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 14 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary

Plus de 55 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.



IEC 60115-8-1

Edition 2.0 2014-10

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Fixed resistors for use in electronic equipment –
Part 8-1: Blank detail specification: Fixed surface mount (SMD) low power film
resistors for general electronic equipment, classification level G**

**Résistances fixes utilisées dans les équipements électroniques –
Partie 8-1: Spécification particulière cadre: Résistances fixes à couche et à faible
dissipation pour montage en surface (CMS), pour les équipements électroniques
universels, niveau G de classification**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX



ICS 31.040.10

ISBN 978-2-8322-1870-9

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	5
0 Introduction.....	7
0.1 Scope of this blank detail specification	7
0.2 Function of this blank detail specification	7
0.3 Identification of the detail specification and the resistor.....	8
1 Scope	10
2 Normative references.....	10
3 Terms and definitions.....	11
4 Characteristics and ratings.....	11
4.1 General.....	11
4.2 Dimensions	11
4.3 Ratings	12
4.4 Resistance range and tolerance on resistance	14
5 Tests and test severities	14
5.1 Insulation resistance	15
5.2 Voltage proof	15
5.3 Variation of resistance with temperature	15
5.4 Short time overload	15
5.5 Temperature rise.....	16
5.6 Solderability	16
5.7 Resistance to soldering heat	16
5.8 Rapid change of temperature	16
5.9 Climatic sequence.....	17
5.9.1 General.....	17
5.9.2 Climatic sequence, dry heat	17
5.9.3 Climatic sequence, cold	17
5.9.4 Climatic sequence, low air pressure	17
5.9.5 Climatic sequence, damp heat, cyclic	18
5.9.6 Climatic sequence, DC load	18
5.9.7 Climatic sequence, final measurements.....	18
5.10 Damp heat, steady state test	18
5.11 Endurance at 70 °C.....	19
5.12 Endurance at upper category temperature	19
5.13 Component solvent resistance test.....	19
5.14 Solvent resistance of marking test.....	19
5.15 Shear test	19
5.16 Substrate bending test	20
5.17 Flammability.....	20
5.18 Electrostatic discharge (ESD) test	20
6 Performance requirements.....	22
6.1 Limits for change of resistance at tests.....	22
6.2 Insulation resistance	22
6.3 Variation of resistance with temperature	23
6.4 Temperature rise.....	23

6.5	Solderability	23
6.6	Flammability.....	23
7	Marking, packaging and ordering information	24
7.1	Marking of the component	24
7.2	Packaging	24
7.3	Marking of the packaging	24
7.4	Ordering information	24
8	Additional information	25
8.1	General.....	25
8.2	Storage and transportation	25
8.3	Substrate for assembly.....	25
8.4	Soldering process	25
8.5	Use of cleaning agents or solvents	26
8.6	Coating or potting after assembly	26
9	Quality assessment procedures	26
9.1	General.....	26
9.1.1	100 % test.....	26
9.1.2	Certificate of conformity (CoC)	27
9.1.3	Certified test records of released lots	27
9.2	Qualification approval.....	27
9.3	Maintenance of a qualification approval	27
9.3.1	Quality conformance inspection	27
9.3.2	Non-conforming specimen	27
Annex A (normative)	0 Ω resistors (jumper).....	37
A.1	General.....	37
A.2	Characteristics and ratings	37
A.3	Tests and test severities.....	37
A.4	Performance requirements	38
A.5	Marking, packaging and ordering information.....	38
A.6	Additional information.....	38
A.7	Quality assessment procedures	38
A.7.1	Test schedule for qualification approval	38
A.7.2	Test schedule for quality conformance inspection	38
Annex B (informative)	Letter symbols and abbreviations	40
B.1	Letter symbols.....	40
B.2	Abbreviations	41
Annex X (informative)	Cross-reference for references to the prior revision of this specification.....	42
Bibliography	43
Figure 1	– Outline and dimensions	11
Figure 2	– Derating curve	13
Table 1	– Styles and dimensions	12
Table 2	– Climatic categories	12
Table 3	– Ratings.....	13

Table 4 – Temperature coefficients, tolerances and resistance ranges for climatic category ... / ... /	14
Table 5 – Short time overload duration	16
Table 6 – Remaining cycles of damp heat, cyclic test.....	18
Table 7 – Damp heat steady state test duration	18
Table 8 – Shear test force	20
Table 9 – ESD test voltages	21
Table 10 –Limits for change of resistance.....	22
Table 11 – Temperature coefficients and permissible change of resistance.....	23
Table 12 – Test schedule for qualification approval.....	28
Table 13 – Test schedule for quality conformance inspection.....	32
Table A.1 – Ratings for 0 Ω resistors	37

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIXED RESISTORS FOR USE IN ELECTRONIC EQUIPMENT –

Part 8-1: Blank detail specification: Fixed surface mount (SMD) low power film resistors for general electronic equipment, classification level G

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.
- 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.
- 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.

International Standard IEC 60115-8-1 has been prepared by IEC technical committee 40: Capacitors and resistors for electronic equipment.

This second edition cancels and replaces the first edition, published in 1989 and constitutes a technical revision.

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

- It includes minor revisions related to tables, figures and references.

- Dedication to resistors of product classification level G, which is for general electronic equipment, typically operated under benign or moderate environmental conditions, like e.g. consumer products, or telecommunication user terminals.
- Implementation of the zero defect policy with the application of the single assessment level EZ in all test schedules.
- Substitution of the temperature coefficient of resistance (TCR), specified over the full defined temperature range, for the inferior and less significant temperature characteristic.
- Addition of a test for the immunity against electrostatic discharge.
- Implementation of the concept of stability classes with coordinated requirements to the performance at all prescribed tests.
- Addition of information relevant for the component user in his assembly process.
- Addition of an Annex providing special provisions for 0 Ω resistors (jumpers), which may be part of a range of products covered by a detail specification derived from this blank detail specification.

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

FDIS	Report on voting
40/2297/FDIS	40/2313B/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.

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 8-1: Blank detail specification: Fixed surface mount (SMD) low power film resistors for general electronic equipment, classification level G

0 Introduction

COMMENT This introduction is not intended to be copied into the drafted detail specification. Therefore it is positioned prior to 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 60115-8 is applicable to the drafting of detail specifications for fixed surface mount (SMD) low-power film resistors in rectangular chip shape (styles RR) or in cylindrical MELF shape (styles RC) classified to level G, which is defined in IEC 60115-8:2009, 1.5 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.

Another part of IEC 60115-8 provides a separate blank detail specification for the drafting of detail specifications for fixed surface mount (SMD) low-power film resistors in rectangular chip shape (styles RR) or in cylindrical MELF shape (styles RC) classified to level P.

Other parts of IEC 60115-8 may be issued to provide blank detail specifications for the drafting of detail specifications for surface mount resistors of other geometrical shapes, 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 considered as being in accordance with IEC specifications nor shall they so be described.

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

In the preparation of the detail specification, the content of IEC 60118-8:2009, 1.4 shall be taken into account. The detail specification should be written by using the preferred values given in IEC 60115-8.

Units, graphical symbols and letter symbols should, whenever possible, be taken from those prescribed by the following standards:

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

This blank detail specification uses for its purpose two different indications:

- NOTE For notes which give additional information intended to assist the understanding or use of the resulting document and therefore they shall be

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-