

SLOVENSKI STANDARD

SIST EN 60384-20:2015

01-december-2015

Nadomešča:

SIST EN 60384-20:2008

Nespremenljivi kondenzatorji za elektronsko opremo - 20. del: Področna specifikacija - Nespremenljivi metalizirani enosmerni kondenzatorji za površinsko montažo z dielektrikom iz polifenil sulfidne plasti

Fixed capacitors for use in electronic equipment - Part 20: Sectional specification - Fixed metallized polyphenylene sulfide film dielectric surface mount d.c. capacitors

iTeh STANDARD PREVIEW

Festkondensatoren zur Verwendung in Geräten der Elektronik - Teil 20: Rahmenspezifikation - Oberflächenmontierbare Festkondensatoren für Gleichspannung mit metallisierter Polyphenyl-Sulfid-Folie als Dielektrikum

[SIST EN 60384-20:2015](https://standards.iteh.ai/catalog/standards/sist/b1e5d661-ac72-4be8-b4c8-b15f5d740/sist-en-60384-20-2015)

[https://standards.iteh.ai/catalog/standards/sist/b1e5d661-ac72-4be8-b4c8-](https://standards.iteh.ai/catalog/standards/sist/b1e5d661-ac72-4be8-b4c8-b15f5d740/sist-en-60384-20-2015)

Condensateurs fixes utilisés dans les équipements électroniques - Partie 20: Spécification intermédiaire - Condensateurs fixes pour montage en surface pour courant continu à diélectrique en film de sulfure de polyphénulène métallisé

Ta slovenski standard je istoveten z: EN 60384-20:2015

ICS:

31.060.10 Fiksni kondenzatorji Fixed capacitors

SIST EN 60384-20:2015 en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60384-20:2015

<https://standards.iteh.ai/catalog/standards/sist/b1e5d661-ac72-4be8-b4c8-b15bf5cd7df4/sist-en-60384-20-2015>

EUROPEAN STANDARD

EN 60384-20

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2015

ICS 31.060.10

Supersedes EN 60384-20:2008

English Version

**Fixed capacitors for use in electronic equipment - Part 20:
Sectional specification - Fixed metallized polyphenylene sulfide
film dielectric surface mount d.c. capacitors
(IEC 60384-20:2015)**

Condensateurs fixes utilisés dans les équipements
électroniques - Partie 20: Spécification intermédiaire -
Condensateurs fixes pour montage en surface pour courant
continu à diélectrique en film de sulfure de polyphénulène
métallisé
(IEC 60384-20:2015)

Festkondensatoren zur Verwendung in Geräten der
Elektronik - Teil 20: Rahmenspezifikation -
Oberflächenmontierbare Festkondensatoren für
Gleichspannung mit metallisierter Polyphenyl-Sulfid-Folie
als Dielektrikum
(IEC 60384-20:2015)

This European Standard was approved by CENELEC on 2015-08-26. 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

EN 60384-20:2015**European Foreword**

The text of document 40/2381/FDIS, future edition 3 of IEC 60384-20, prepared by IEC TC 40, "Capacitors and resistors for electronic equipment" was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60384-20:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-05-26
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-08-26

This document supersedes EN 60384-20:2008.

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 60384-20:2015 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60384-14

NOTE Harmonized as EN 60384-14.

<https://standards.iteh.ai/catalog/standards/sist/b1e5d661-ac72-4be8-b4c8-b15bf5cd7d4/sist-en-60384-20-2015>

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	2005
-	-		+ corrigendum Jan.	2007
IEC 60063	-	Preferred number series for resistors and capacitors	EN 60063	-
IEC 60068-1	2013	Environmental testing -- Part 1: General and guidance	EN 60068-1	2014
IEC 60384-1	2008	Fixed capacitors for use in electronic equipment -- Part 1: Generic specification	EN 60384-1	2009
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
ISO 3	-	Preferred numbers; Series of preferred numbers	-	-

iTeH STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60384-20:2015
<https://standards.iteh.ai/catalog/standards/sist/b1e5d661-ac72-4be8-b4c8-b15bf5cd7d4/sist-en-60384-20-2015>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60384-20:2015

<https://standards.iteh.ai/catalog/standards/sist/b1e5d661-ac72-4be8-b4c8-b15bf5cd7df4/sist-en-60384-20-2015>



INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Fixed capacitors for use in electronic equipment –
Part 20: Sectional specification – Fixed metallized polyphenylene sulfide film
dielectric surface mount d.c. capacitors**

**Condensateurs fixes utilisés dans les équipements électroniques –
Partie 20: Spécification intermédiaire – Condensateurs fixes pour montage en
surface pour courant continu à diélectrique en film de sulfure de polyphénylène
métallisé**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 31.060.10

ISBN 978-2-8322-2792-3

**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
1 General	7
1.1 Scope	7
1.2 Object	7
1.3 Normative references	7
1.4 Information to be given in a detail specification	8
1.4.1 General	8
1.4.2 Outline drawing and dimensions	8
1.4.3 Mounting	8
1.4.4 Ratings and characteristics	8
1.4.5 Marking	9
1.5 Terms and definitions	9
1.6 Marking	9
1.6.1 General	9
1.6.2 Information for marking	9
1.6.3 Marking on capacitors	9
1.6.4 Marking on packaging	10
2 Preferred ratings and characteristics	10
2.1 Preferred characteristics	10
2.2 Preferred values of ratings	10
2.2.1 Nominal capacitance (C_N)	10
2.2.2 Tolerance on nominal capacitance	10
2.2.3 Rated voltage (U_R)	10
2.2.4 Category voltage (U_C)	11
2.2.5 Rated temperature	11
3 Quality assessment procedures	11
3.1 Primary stage of manufacture	11
3.2 Structurally similar components	11
3.3 Certified test records of released lots	11
3.4 Qualification approval procedures	12
3.4.1 General	12
3.4.2 Qualification approval on the basis of the fixed sample size procedure	12
3.4.3 Tests	12
3.5 Quality conformance inspections	18
3.5.1 Formation of inspection lots	18
3.5.2 Test schedule	19
3.5.3 Delayed delivery	19
3.5.4 Assessment levels	19
4 Test and measurement procedures	20
4.1 Mounting	20
4.2 Visual examination and check of dimensions	20
4.2.1 General	20
4.2.2 Visual examination and check of dimensions	20
4.2.3 Requirements	20
4.3 Electrical tests	20
4.3.1 Voltage proof	20

4.3.2	Capacitance	21
4.3.3	Tangent of loss angle ($\tan \delta$)	21
4.3.4	Insulation resistance	22
4.4	Shear test	23
4.4.1	General	23
4.5	Substrate bending test	23
4.5.1	General	23
4.5.2	Initial inspections	23
4.5.3	Final inspections and requirements	23
4.6	Resistance to soldering heat	24
4.6.1	General	24
4.6.2	Initial inspections	24
4.6.3	Test conditions	24
4.6.4	Recovery	24
4.6.5	Final inspections and requirements	24
4.7	Solderability	24
4.7.1	General	24
4.7.2	Test conditions	24
4.7.3	Final inspections and requirements	24
4.8	Rapid change of temperature	24
4.8.1	General	24
4.8.2	Initial inspections	24
4.8.3	Test conditions	24
4.8.4	Final inspections and requirements	25
4.9	Climatic sequence	25
4.9.1	General	25
4.9.2	Initial inspections	25
4.9.3	Dry heat	25
4.9.4	Damp heat, cyclic, test Db, first cycle	25
4.9.5	Cold	25
4.9.6	Damp heat, cyclic, test Db, remaining cycles	25
4.9.7	Recovery	25
4.9.8	Final inspections and requirements	25
4.10	Damp heat, steady state	25
4.10.1	General	25
4.10.2	Initial inspections	25
4.10.3	Test conditions	26
4.10.4	Recovery	26
4.10.5	Final inspections and requirements	26
4.11	Endurance	26
4.11.1	General	26
4.11.2	Initial inspections	26
4.11.3	Test conditions	26
4.11.4	Final inspections and requirements	26
4.12	Charge and discharge	27
4.12.1	General	27
4.12.2	Initial inspections	27
4.12.3	Test conditions	27
4.12.4	Recovery	27

4.12.5	Final inspections and requirements.....	27
4.13	Component solvent resistance (if required)	27
4.13.1	General	27
4.14	Solvent resistance of the marking (if required)	27
4.14.1	General	27
	Bibliography.....	28
	Table 1 – Percentage limit of the rated voltage at a.c. voltage frequency	11
	Table 2 – Category voltages for upper category temperature 125 °C.....	11
	Table 3 – Category voltages for upper category temperature 155 °C.....	11
	Table 4 – Sampling plan for qualification approval – Assessment level EZ	13
	Table 5 – Test schedule for qualification approval (1 of 5)	14
	Table 6 – Lot-by-lot inspection	19
	Table 7 – Periodic tests	20
	Table 8 – Test voltages.....	21
	Table 9 – Tangent of loss angle limits	22
	Table 10 – Requirements insulation resistance	23
	Table 11 – Correction factor dependent on test temperature	23
	Table 12 – Endurance test for Grade 1, 2 and 3 capacitors.....	26

ITeH STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60384-20:2015

<https://standards.iteh.ai/catalog/standards/sist/b1e5d661-ac72-4be8-b4c8-b15bf5cd7d4/sist-en-60384-20-2015>

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIXED CAPACITORS FOR USE IN ELECTRONIC EQUIPMENT –**Part 20: Sectional specification – Fixed metallized polyphenylene sulfide film dielectric surface mount d.c. capacitors**

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 60384-20 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 2008, and constitutes a technical revision.

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

- a) Revision of the structure in accordance with ISO/IEC Directives, Part 2:2011 (sixth edition) to the extent practicable, and harmonization between other similar kinds of documents.
- b) In addition, Clause 4 and all the tables have been reviewed in order to prevent duplications and contradictions.

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

FDIS	Report on voting
40/2381/FDIS	40/2394/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.

A list of all parts in the IEC 60384 series, published under the general title *Fixed capacitors for use in electronic equipment*, can be found on the IEC website.

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

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 60384-20:2015](#)

<https://standards.iteh.ai/catalog/standards/sist/b1e5d661-ac72-4be8-b4c8-b15bf5cd7d4/sist-en-60384-20-2015>