ICS 31.060.40 SLOVENSKÁ TECHNICKÁ NORMA Február 2018

| STN | **Nepremenné kondenzátory na použitie v elektronických zariadeniach Časť 15: Rámcová špecifikácia Nepremenné tantalové kondenzátory s netuhým alebo tuhým elektrolytom** | **STN EN 60384-15** 35 8291 |
|---|---|---|

Fixed capacitors for use in electronic equipment - Part 15: Sectional specification: Fixed tantalum capacitors with non-solid or solid electrolyte

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 01/18

Obsahuje: EN 60384-15:2017, IEC 60384-15:2017

Oznámením tejto normy sa od 26.06.2020 ruší
STN 35 8291-15 - IEC 60384-15 z 29.08.1988

**126065**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

**EN 60384-15**

September 2017

ICS 31.060.40

English Version

# Fixed capacitors for use in electronic equipment - Part 15: Sectional specification: Fixed tantalum capacitors with non-solid or solid electrolyte (IEC 60384-15:2017)

Condensateurs fixes utilisés dans les équipements électroniques - Partie 15: Spécification intermédiaire - Condensateurs fixes au tantale, à électrolyte non solide ou solide
(IEC 60384-15:2017)

Festkondensatoren zur Verwendung in Geräten der Elektronik - Teil 15: Rahmenspezifikation - Tantal-Elektrolyt-Kondensatoren mit flüssigem oder festem Elektrolyten
(IEC 60384-15:2017)

This European Standard was approved by CENELEC on 2017-06-26. 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.

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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**



Ref. No. EN 60384-15:2017 E

**EN 60384-15:2017**

## European foreword

The text of document 40/2523/FDIS, future edition 2 of IEC 60384-15, 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 60384-15:2017.

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) | 2018-03-26 |
| • latest date by which the national standards conflicting with the document have to be withdrawn | (dow) | 2020-06-26 |

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

## Endorsement notice

The text of the International Standard IEC 60384-15:2017 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

| | | |
|---|---|---|
| IEC 60068-2-54:2006 | NOTE | Harmonized as EN 60068-2-54:2006 (not modified). |

# Annex ZA
(normative)

## Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where 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.

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| 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 60068-2-6 | - | Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal) | EN 60068-2-6 | - |
| IEC 60068-2-14 | - | Environmental testing - Part 2-14: Tests - Test N: Change of temperature | EN 60068-2-14 | - |
| IEC 60384-1 | 2016 | Fixed capacitors for use in electronic equipment - Part 1: Generic specification | EN 60384-1 | 2016 |
| IEC 60417-DB | - | Graphical symbols for use on equipment | - | - |
| 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 | - | - |

IEC 60384-15

Edition 2.0 2017-05

# INTERNATIONAL STANDARD

## Fixed capacitors for use in electronic equipment – Part 15: Sectional specification: Fixed tantalum capacitors with non-solid or solid electrolyte

IEC 60384-15:2017-05(en)

# IEC 60384-15

Edition 2.0 2017-05

# INTERNATIONAL STANDARD

## Fixed capacitors for use in electronic equipment – Part 15: Sectional specification: Fixed tantalum capacitors with non-solid or solid electrolyte

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 31.060.40

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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# FIXED CAPACITORS FOR USE IN ELECTRONIC EQUIPMENT –

## Part 15: Sectional specification: Fixed tantalum capacitors with non-solid or solid electrolyte

## 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 60384-15 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 1982, Amendment 1:1987 and Amendment 2:1992, 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 2:2016 (seventh 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 International Standard is based on the following documents:

| FDIS | Report on voting |
|---|---|
| 40/2523/FDIS | 40/2535/RVD |

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

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

The list of all parts of the IEC 60384 series, 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 document will remain unchanged until the stability date indicated on the IEC website under "http://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.

A bilingual version of this publication may be issued at a later date.

# FIXED CAPACITORS FOR USE IN ELECTRONIC EQUIPMENT –

# Part 15: Sectional specification: Fixed tantalum capacitors with non-solid or solid electrolyte

## 1 General

### 1.1 Scope

This part of IEC 60384 applies to through-hole/leaded polar and bipolar tantalum electrolyte capacitors with solid and non-solid electrolyte for use in electronic equipment.

It includes capacitors for long-life applications and capacitors for general-purpose applications.

Capacitors for special purpose application may need additional requirements.

This document covers two basic sub-families:

- Sub-family 1: Fixed non-solid electrolyte tantalum capacitors with porous anode.
- Sub-family 2: Fixed solid electrolyte tantalum capacitors with porous anode.

### 1.2 Object

The object of this document is to prescribe preferred ratings and characteristics and to select from IEC 60384-1:2016 the appropriate quality assessment procedures, tests and measuring methods and to give general performance requirements for this type of capacitor. Test severities and requirements prescribed in detail specifications referring to this sectional specification shall be of equal or higher performance level, because lower performance levels are not permitted.

### 1.3 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 60063, *Preferred number series for resistors and capacitors*

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

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

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

IEC 60384-1:2016, *Fixed capacitors for use in electronic equipment – Part 1: Generic specification*

IEC 60417, *Graphical symbols for use on equipment*

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

ISO 3, *Preferred numbers – Series of preferred numbers*

### 1.4 Information to be given in a detail specification

#### 1.4.1 General

Detail specifications shall be derived from the blank detail specification.

Detail specifications shall not specify requirements inferior to those of the generic, sectional or blank detail specification. When more severe requirements are included, they shall be listed in 1.9 of the detail specification and indicated in the test schedules, for example, by an asterisk.

The information given in 1.4.2 may, for convenience, be presented in tabular form.

The following information shall be given in each detail specification and the values quoted shall preferably be selected from those given in the appropriate clause of this sectional specification.

#### 1.4.2 Outline drawing and dimensions

There shall be an illustration of the capacitors as an aid to easy recognition and for comparison of the capacitors with others.

Dimensions and their associated tolerances, which affect interchangeability and mounting, shall be given in the detail specification. All dimensions shall preferably be stated in millimetres. However, when the original dimensions are given in inches, the converted metric dimensions in millimetres shall be added.

The numerical values of the body shall be given as follows:

- for general: the length, width and height;
- for cylindrical body: the diameter and length.

The numerical values of the terminals shall be given as follows:

- for general: the spacing;
- for leaded terminals: the diameter and spacing.

When the configuration is other than described above, the detail specification shall state such dimensional information as will adequately describe the capacitor.

#### 1.4.3 Mounting

The detail specification shall specify the method of mounting to be applied for normal use and for the application of the vibration and the bump or shock tests. The design of the capacitor may be such that special mounting fixtures are required in its use. In this case, the detail specification shall describe the mounting fixtures and they shall be used in the application of the vibration and bump or shock tests.

#### 1.4.4 Ratings and characteristics

##### 1.4.4.1 General

The ratings and characteristics shall be given in accordance with the relevant clauses of this specification, together with the information in 1.4.4.2, 1.4.4.3 and 1.4.4.4.

#### 1.4.4.2 Nominal capacitance range

See 2.2.1.

When products approved to the detail specification have different capacitance ranges, the following statement should be added:

”The nominal capacitance range available in each voltage range is given in the register of approvals, available for example on the IECQ on-line certificate system website www.iecq.org”.

#### 1.4.4.3 Particular characteristics

Additional characteristics may be listed, when they are considered necessary to specify adequately the component for design and application purposes.

#### 1.4.4.4 Soldering

The detail specification shall specify the test methods, severities and requirements applicable for the solderability test and the resistance to soldering heat tests.

### 1.4.5 Marking

The detail specification shall specify the content of the marking on the capacitor and on the packaging. When there are deviations from 1.6, these shall be given in the detail specification.