



IEC 60384-26

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REDLINE VERSION

# INTERNATIONAL STANDARD



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**Fixed capacitors for use in electronic equipment –  
Part 26: Sectional specification – Fixed aluminium electrolytic capacitors with  
conductive polymer solid electrolyte**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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### **FIXED CAPACITORS FOR USE IN ELECTRONIC EQUIPMENT –**

### **Part 26: Sectional specification – Fixed aluminium electrolytic capacitors with conductive polymer solid electrolyte**

#### FOREWORD

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International Standard IEC 60384-26 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 2010. This edition 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 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 |
|--------------|------------------|
| 40/2599/FDIS | 40/2605/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.

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- withdrawn,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

**IMPORTANT – The “colour inside” logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this publication using a colour printer.**

The contents of the corrigendum of April 2020 have been included in this copy.

# FIXED CAPACITORS FOR USE IN ELECTRONIC EQUIPMENT –

## Part 26: Sectional specification – Fixed aluminium electrolytic capacitors with conductive polymer solid electrolyte

### 1 General

#### 1.1 Scope

This part of IEC 60384 ~~is applicable~~ applies to fixed aluminium electrolytic capacitors with conductive polymer solid electrolyte primarily intended for d.c. applications for use in electronic equipment.

**NOTE** Fixed aluminium electrolytic capacitors with solid (MnO<sub>2</sub>) electrolyte are covered by IEC 60384-4 ~~and IEC 60384-4-2~~. Surface mount Fixed aluminium electrolytic surface mount capacitors with conductive polymer solid electrolyte are covered by IEC 60384-25 ~~and IEC 60384-25-1~~.

#### 1.2 Object

The object of this document is to prescribe preferred ratings and characteristics and to select from IEC 60384-1, 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 60063:1963, *Preferred number series for resistors and capacitors*  
~~Amendment 1 (1967)~~  
~~Amendment 2 (1977)~~

IEC 60068-1:1988 2013, *Environmental testing – Part 1: General and guidance*<sup>4</sup>

~~IEC 60068-2-14:2009, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*~~

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 60384-1:2008 2016, *Fixed capacitors for use in electronic equipment – Part 1: Generic specification*

~~IEC 60410:1973, *sampling plans and procedures for inspection by attributes*~~

<sup>4</sup> ~~For the tests in the IEC 60068 series of publication, the editions referenced in the applicable test clauses of the generic specification shall be used.~~



IEC 60417, *Graphical symbols for use on equipment* (available at <http://www.graphical-symbols.info/equipment>)

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

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

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

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**Fixed capacitors for use in electronic equipment –  
Part 26: Sectional specification – Fixed aluminium electrolytic capacitors with  
conductive polymer solid electrolyte**

**Condensateurs fixes utilisés dans les équipements électroniques –  
Partie 26: Spécification intermédiaire – Condensateurs fixes électrolytiques en  
aluminium à électrolyte solide en polymère conducteur**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FIXED CAPACITORS FOR USE IN ELECTRONIC EQUIPMENT –****Part 26: Sectional specification – Fixed aluminium electrolytic capacitors with conductive polymer solid electrolyte**

## FOREWORD

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International Standard IEC 60384-26 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 2010. This edition 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 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 |
|--------------|------------------|
| 40/2599/FDIS | 40/2605/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.

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

The contents of the corrigendum of April 2020 have been included in this copy.

## **FIXED CAPACITORS FOR USE IN ELECTRONIC EQUIPMENT –**

### **Part 26: Sectional specification – Fixed aluminium electrolytic capacitors with conductive polymer solid electrolyte**

## **1 General**

### **1.1 Scope**

This part of IEC 60384 applies to fixed aluminium electrolytic capacitors with conductive polymer solid electrolyte primarily intended for d.c. applications for use in electronic equipment.

Fixed aluminium electrolytic capacitors with solid ( $\text{MnO}_2$ ) electrolyte are covered by IEC 60384-4. Fixed aluminium electrolytic surface mount capacitors with conductive polymer solid electrolyte are covered by IEC 60384-25.

### **1.2 Object**

The object of this document is to prescribe preferred ratings and characteristics and to select from IEC 60384-1, 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 60068-2-20:2008, *Environmental testing – Part 2-20: Tests – Test T – Test methods for solderability and resistance to soldering heat of devices with leads*

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

IEC 60417, *Graphical symbols for use on equipment* (available at <http://www.graphical-symbols.info/equipment>)

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

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



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## COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

**CONDENSATEURS FIXES UTILISÉS  
DANS LES ÉQUIPEMENTS ÉLECTRONIQUES –****Partie 26: Spécification intermédiaire – Condensateurs fixes  
électrolytiques en aluminium à électrolyte solide en polymère conducteur**

## AVANT-PROPOS

- 1) La Commission Electrotechnique Internationale (IEC) est une organisation mondiale de normalisation composée de l'ensemble des comités électrotechniques nationaux (Comités nationaux de l'IEC). L'IEC a pour objet de favoriser la coopération internationale pour toutes les questions de normalisation dans les domaines de l'électricité et de l'électronique. A cet effet, l'IEC – entre autres activités – publie des Normes internationales, des Spécifications techniques, des Rapports techniques, des Spécifications accessibles au public (PAS) et des Guides (ci-après dénommés "Publication(s) de l'IEC"). Leur élaboration est confiée à des comités d'études, aux travaux desquels tout Comité national intéressé par le sujet traité peut participer. Les organisations internationales, gouvernementales et non gouvernementales, en liaison avec l'IEC, participent également aux travaux. L'IEC collabore étroitement avec l'Organisation Internationale de Normalisation (ISO), selon des conditions fixées par accord entre les deux organisations.
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- 8) L'attention est attirée sur les références normatives citées dans cette publication. L'utilisation de publications référencées est obligatoire pour une application correcte de la présente publication.
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La Norme internationale IEC 60384-26 a été établie par le comité d'études 40 de l'IEC: Condensateurs et résistances pour équipements électroniques.

Cette deuxième édition annule et remplace la première édition parue en 2010. Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

- a) révision de la structure conformément aux directives ISO/IEC, Partie 2:2016, dans la mesure du possible, et harmonisation avec d'autres types de documents similaires;

b) en outre, l'Article 4 et tous les tableaux ont été révisés dans le but d'éviter les répétitions et les contradictions.

Le texte de cette Norme internationale est issu des documents suivants:

| FDIS         | Rapport de vote |
|--------------|-----------------|
| 40/2599/FDIS | 40/2605/RVD     |

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation de cette Norme internationale.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2.

Une liste de toutes les parties de la série IEC 60384, publiées sous le titre général *Condensateurs fixes utilisés dans les équipements électroniques*, peut être consultée sur le site web de l'IEC.

Le comité a décidé que le contenu de ce document ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous "<http://webstore.iec.ch>" dans les données relatives à la publication recherchée. A cette date, le document sera

- reconduit,
- supprimé,
- remplacé par une édition révisée, ou
- amendé.

Le contenu du corrigendum d'avril 2020 a été pris en considération dans cet exemplaire.

## CONDENSATEURS FIXES UTILISÉS DANS LES ÉQUIPEMENTS ÉLECTRONIQUES –

### Partie 26: Spécification intermédiaire – Condensateurs fixes électrolytiques en aluminium à électrolyte solide en polymère conducteur

#### 1 Généralités

##### 1.1 Domaine d'application

La présente partie de l'IEC 60384 s'applique aux condensateurs fixes électrolytiques en aluminium à électrolyte solide en polymère conducteur destinés principalement aux applications en courant continu dans des équipements électroniques.

Les condensateurs fixes électrolytiques en aluminium à électrolyte solide ( $MnO_2$ ) sont couverts par l'IEC 60384-4. Les condensateurs fixes électrolytiques en aluminium pour montage en surface à électrolyte solide en polymère conducteur sont couverts par l'IEC 60384-25.

##### 1.2 Objet

Le présent document a pour objet de prescrire des caractéristiques et des valeurs assignées préférentielles et de sélectionner en se référant à l'IEC 60384-1, les procédures d'assurance de la qualité appropriées, les essais et les méthodes de mesure et de donner les exigences de performances générales pour ce type de condensateur. Les sévérités et les exigences d'essai prescrites dans les spécifications particulières se rapportant à la présente spécification intermédiaire doivent présenter des niveaux de performances supérieurs ou égaux, parce que des niveaux de performance inférieurs ne sont pas autorisés.

##### 1.3 Références normatives

Les documents suivants cités dans le texte constituent, pour tout ou partie de leur contenu, des exigences du présent document. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 60063, *Séries de valeurs normales pour résistances et condensateurs*

IEC 60068-1:2013, *Essais d'environnement – Partie 1: Généralités et lignes directrices*

IEC 60068-2-20:2008, *Essais d'environnement – Partie 2-20: Essais – Essai T – Méthodes d'essai de la brasabilité et de la résistance à la chaleur de brasage des dispositifs à broches*

IEC 60384-1:2016, *Condensateurs fixes utilisés dans les équipements électroniques – Partie 1: Spécification générique*

IEC 60417, *Symboles graphiques utilisables sur le matériel* (adresse <http://www.graphical-symbols.info/equipment>)

IEC 61193-2:2007, *Quality assessment systems – Part 2: Selection and use of sampling plans for inspection of electronic components and packages* (disponible en anglais seulement)

ISO 3, *Nombres normaux – Séries de nombres normaux*