



National Standards Authority of Ireland

IRISH STANDARD

I.S. EN 60384-4-1:2007

ICS 31.060.50

**FIXED CAPACITORS FOR USE IN
ELECTRONIC EQUIPMENT -- PART 4-1:
BLANK DETAIL SPECIFICATION - FIXED
ALUMINIUM ELECTROLYTIC CAPACITORS
WITH NON-SOLID ELECTROLYTE -
ASSESSMENT LEVEL EZ (IEC 60384-4
-1:2007 (EQV))**

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*This Irish Standard was
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8 June 2007*

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60384-4-1

May 2007

ICS 31.060.50

English version

**Fixed capacitors for use in electronic equipment -
Part 4-1: Blank detail specification -
Fixed aluminium electrolytic capacitors
with non-solid electrolyte -
Assessment level EZ
(IEC 60384-4-1:2007)**

Condensateurs fixes utilisés
dans les équipements électroniques -
Partie 4-1: Spécification
particulière cadre -
Condensateurs fixes électrolytiques
en aluminium à électrolyte non solide -
Niveau d'assurance de la qualité EZ
(CEI 60384-4-1:2007)

Festkondensatoren zur Verwendung
in Geräten der Elektronik -
Teil 4-1: Vordruck für Bauartspezifikation -
Aluminium-Elektrolyt-Kondensatoren
mit flüssigem Elektrolyten -
Bewertungsstufe EZ
(IEC 60384-4-1:2007)

This European Standard was approved by CENELEC on 2007-04-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 40/1762/CDV, future edition 3 of IEC 60384-4-1, prepared by IEC TC 40, Capacitors and resistors for electronic equipment, was submitted to the IEC-CENELEC parallel Unique Acceptance Procedure and was approved by CENELEC as EN 60384-4-1 on 2007-04-01.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2008-01-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2010-04-01

L'Annexe ZA a été ajoutée par le CENELEC.

Endorsement notice

The text of the International Standard IEC 60384-4-1:2007 was approved by CENELEC as a European Standard without any modification.

Annex ZA

(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60384-1 (mod)	- ¹⁾	Fixed capacitors for use in electronic equipment - Part 1: Generic specification	EN 60384-1 + corr. October	2001 ²⁾ 2001
IEC 60384-4	- ¹⁾	Fixed capacitors for use in electronic equipment - Part 4: Sectional specification - Aluminium electrolytic capacitors with solid (MnO ₂) and non-solid electrolyte	EN 60384-4	2007 ²⁾
IEC 60410	- ¹⁾	Sampling plans and procedures for inspection - by attributes		-

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

INTERNATIONAL STANDARD

IEC
60384-4-1

QC 300301

Third edition
2007-03

Fixed capacitors for use in electronic equipment –

Part 4-1:

Blank detail specification –

Fixed aluminium electrolytic

capacitors with non-solid electrolyte –

Assessment level EZ



Reference number
IEC 60384-4-1:2007(E)

Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

Consolidated editions

The IEC is now publishing consolidated versions of its publications. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

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INTERNATIONAL STANDARD

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60384-4-1

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE

P

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIXED CAPACITORS FOR USE IN ELECTRONIC EQUIPMENT –**Part 4-1: Blank detail specification –
Fixed aluminium electrolytic capacitors with non-solid electrolyte –
Assessment level EZ**

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 60384-4-1 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 2000 and constitutes a minor revision related to tables, figures and references.

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

CDV	Report on voting
40/1762/CDV	40/1820/RVC

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 QC number that appears on the front cover of this publication is the specification number in the IEC Quality Assessment System for Electronic Components (IECQ).

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 publication will remain unchanged until the maintenance result 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.

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

FIXED CAPACITORS FOR USE IN ELECTRONIC EQUIPMENT –

Part 4-1: Blank detail specification – Fixed aluminium electrolytic capacitors with non-solid electrolyte – Assessment level EZ

Blank detail specification

A blank detail specification is a supplementary document to the sectional specification and contains requirements for style and layout and minimum content of detail specifications. Detail specifications not complying with these requirements may not be considered as being in accordance with IEC specifications nor shall they be so described.

In the preparation of detail specifications, the contents of 1.4 of the sectional specification shall be taken into account.

The numbers between brackets on the first page correspond to the following information which shall be inserted in the position indicated.

Identification of the detail specification

- [1] The International Electrotechnical Commission or the National Standards Organization under whose authority the detail specification is drafted.
- [2] The IEC or National Standards number of the detail specification, data of issue and any further information required by the national system.
- [3] The number and issue number of the IEC or national generic specification.
- [4] The IEC number of the blank detail specification.

Identification of the capacitor

- [5] A short description of the type of capacitor.
- [6] Information on typical construction (when applicable).
NOTE When the capacitor is not designed for use in printed board applications, this is clearly stated in the detail specification in this position.
- [7] Outline drawing with main dimensions which are of importance for interchangeability and/or reference to the national or international documents for outlines. Alternatively, this drawing may be given in an annex to the detail specification.
- [8] Application or group of applications covered and/or assessment level.
NOTE The assessment level(s) to be used in a detail specification are selected from 3.5.4 of the sectional specification. This implies that one blank detail specification may be used in combination with several assessment levels, provided the grouping of the tests does not change.
- [9] Reference data on the most important properties, to allow comparison between the various capacitor types.

[1]	IEC 60384-4-1-XXX [2] QC 300301-XXX
ELECTRONIC COMPONENTS OF ASSESSED QUALITY IN ACCORDANCE WITH: IEC 60384-1 IEC 60384-4 [3]	IEC 60384-4-1 [4] QC 300301
	FIXED ALUMINIUM ELECTROLYTIC CAPACITORS WITH NON-SOLID ELECTROLYTE [5]
Outline drawing: (see Table 1) (..... angle projection) [7] (Other shapes are permitted within the dimensions given.)	[6]
	Assessment level(s): EZ [8] Performance grade:

Information on the availability of components qualified to this detail specification is given in the IEC QC 001005.

[9]

1 General data

1.1 Recommended method(s) of mounting (to be inserted)

See 1.4.2 of IEC 60384-4.

1.2 Dimensions

Table 1 – Case size reference and dimensions

Case size reference	Dimensions mm						
	Ø	L	H	d		

NOTE 1 When there is no case size reference, Table 1 may be omitted and the dimensions given in Table 2, which then becomes Table 1.

NOTE 2 The dimensions are given as maximum dimensions or as nominal dimensions with a tolerance.

1.3 Ratings and characteristics

Capacitance range (see Table 2)

Tolerance on rated capacitance

Rated voltage (see Table 2)

Category voltage (if applicable) (see Table 2)

Climatic category

Rated temperature

Rated ripple current (see Table 3)

Tangent of loss angle (see Table 3)

NOTE Instead of the tangent of loss angle ($\tan \delta$), the equivalent series resistance ESR may be specified in accordance with 4.3.3.2d) of IEC 60384-4.

Leakage current

Impedance (if applicable) (see Table 3)

Reverse voltage (if required)

Insulation resistance (if applicable)

Table 2 – Values of capacitance and of voltage related to case sizes

Rated voltage				
Category voltage ^a				
	Case size	Case size	Case size	Case size
Rated capacitance µF				

^a If different from the rated voltage.

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