

**Fixed capacitors for use in electronic equipment --
Part 11: Sectional specification - Fixed
polyethylene terephthalate film dielectric metal foil
d.c.capacitors**

Fixed capacitors for use in electronic equipment -- Part
11: Sectional specification - Fixed polyethylene
terephthalate film dielectric metal foil d.c.capacitors

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 60384-11:2008 sisaldab Euroopa standardi EN 60384-11:2008 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 21.05.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 18.04.2008.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 60384-11:2008 consists of the English text of the European standard EN 60384-11:2008.

This standard is ratified with the order of Estonian Centre for Standardisation dated 21.05.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 18.04.2008.

The standard is available from Estonian standardisation organisation.

ICS 31.060.30

Võtmesõnad:

Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

**Fixed capacitors for use in electronic equipment -
Part 11: Sectional specification -
Fixed polyethylene-terephthalate film dielectric metal foil d.c. capacitors
(IEC 60384-11:2008)**

Condensateurs fixes utilisés
dans les équipements électroniques -
Partie 11: Spécification intermédiaire -
Condensateurs fixes pour courant continu
à diélectrique en film de polytéraphthalate
d'éthylène à armatures
en feuilles métalliques
(CEI 60384-11:2008)

Festkondensatoren zur Verwendung
in Geräten der Elektronik -
Teil 11: Rahmenspezifikation -
Festkondensatoren mit einem
Dielektrikum aus Polyethylen-Terephthalat
und Belägen aus dünnen Metallfolien
für Gleichspannung
(IEC 60384-11:2008)

This European Standard was approved by CENELEC on 2008-03-01. 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 40/1839/CDV, future edition 3 of IEC 60384-11, 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 60384-11 on 2008-03-01.

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) 2008-12-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2011-03-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60384-11:2008 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 60384-14 NOTE Harmonized as EN 60384-14:2005 (not modified).

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 60062	- ¹⁾	Marking codes for resistors and capacitors	EN 60062 + corr. January	2005 ²⁾ 2007
IEC 60063 + A1 + A2	1963 1967 1977	Preferred number series for resistors and capacitors	-	-
IEC 60068-1	- ¹⁾	Environmental testing - Part 1: General and guidance	EN 60068-1	1994 ²⁾
IEC 60384-1 (mod)	1999	Fixed capacitors for use in electronic equipment - Part 1: Generic specification	EN 60384-1 + corr. October	2001 2001
IEC 60410	1973	Sampling plans and procedures for inspection by attributes	-	-
ISO 3	- ¹⁾	Preferred numbers - Series of preferred numbers	-	-

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

CONTENTS

FOREWORD.....	4
1 General	6
1.1 Scope.....	6
1.2 Object	6
1.3 Normative references	6
1.4 Information to be given in a detail specification	6
1.4.1 Outline drawing and dimensions	7
1.4.2 Mounting	7
1.4.3 Ratings and characteristics.....	7
1.4.4 Marking	8
1.5 Terms and definitions	8
1.6 Marking	8
2 Preferred ratings and characteristics	9
2.1 Preferred characteristics	9
2.1.1 Preferred climatic categories	9
2.2 Preferred values of ratings	9
2.2.1 Rated capacitance (C_R).....	9
2.2.2 Tolerance on rated capacitance	9
2.2.3 Rated voltage (U_R).....	9
2.2.4 Category voltage (U_C).....	9
2.2.5 Rated temperature.....	10
3 Quality assessment procedures	10
3.1 Primary stage of manufacture.....	10
3.2 Structurally similar components.....	10
3.3 Certified records of released lots.....	10
3.4 Qualification approval.....	10
3.4.1 Qualification approval on the basis of the fixed sample size procedure	10
3.4.2 Tests	11
3.5 Quality conformance inspection.....	16
3.5.1 Formation of inspection lots.....	16
3.5.2 Test schedule	17
3.5.3 Delayed delivery	17
3.5.4 Assessment levels	17
4 Test and measurement procedures.....	18
4.1 Visual examination and check of dimensions	18
4.2 Electrical tests.....	18
4.2.1 Voltage proof.....	18
4.2.2 Capacitance	18
4.2.3 Tangent of loss angle ($\tan \delta$)	19
4.2.4 Insulation resistance.....	19
4.2.5 Characteristics depending on temperature (if required in the detail specification)	20
4.3 Robustness of terminations	21
4.3.1 Initial measurements	21
4.4 Resistance to soldering heat	21

4.4.1	Conditions	21
4.4.2	Final inspection, measurements and requirements	21
4.5	Solderability	21
4.6	Rapid change of temperature	21
4.6.1	Initial measurement	21
4.6.2	Number of cycles: 5.....	22
4.7	Vibration.....	22
4.8	Bump	22
4.8.1	Initial measurements	22
4.8.2	Severities	22
4.8.3	Final inspection, measurements and requirements	22
4.9	Shock.....	22
4.9.1	Initial measurements	22
4.10	Climatic sequence.....	23
4.10.1	Initial measurements	23
4.10.2	Dry heat	23
4.10.3	Damp heat, cyclic, Test Db, first cycle	23
4.10.4	Cold	23
4.10.5	Low air pressure.....	23
4.10.6	Damp heat, cyclic, Test Db, remaining cycles	24
4.11	Damp heat, steady state.....	24
4.11.1	Initial measurements	24
4.12	Endurance.....	24
4.13	Component solvent resistance (if applicable).....	25
4.14	Solvent resistance of the marking (if applicable).....	25
	Bibliography.....	26
	Table 1 – Fixed sample size test plan for qualification approval – Assessment level EZ.....	12
	Table 2 – Test schedule for qualification approval.....	13
	Table 3 – Lot-by-lot inspection	17
	Table 4 – Periodic tests	18
	Table 5 – Test voltages.....	18
	Table 6 – Insulation resistance	19
	Table 7 – Correction factor dependent on test temperature.....	20
	Table 8 – Characteristics at lower category temperature.....	20
	Table 9 – Characteristics at upper category temperature	21
	Table 10 – Acceleration and duration of the pulse.....	23
	Table 11 – Endurance test.....	24

FIXED CAPACITORS FOR USE IN ELECTRONIC EQUIPMENT –

Part 11: Sectional specification – Fixed polyethylene-terephthalate film dielectric metal foil d.c. capacitors

1 General

1.1 Scope

This part of IEC 60384 applies to fixed direct current capacitors, for rated voltages not exceeding 6 300 V, using as dielectric a polyethylene-terephthalate film and electrodes of thin metal foils. For capacitors with rated voltages exceeding 1 000 V, additional tests and requirements may be specified in the detail specification.

The capacitors covered by this standard are intended for use in electronic equipment.

NOTE Capacitors for radio interference suppression are not included, but are covered by IEC 60384-14 (see bibliography).

1.2 Object

The object of this standard 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 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.

IEC 60062, *Marking codes for resistors and capacitors*

IEC 60063, *Preferred number series for resistors and capacitors*¹⁾

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

IEC 60384-1:1999, *Fixed capacitors for use in electronic equipment – Part 1: Generic specification*

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

ISO 3: *Preferred numbers – Series of preferred numbers*.

1.4 Information to be given in a detail specification

Detail specifications shall be derived from the relevant blank detail specification.

¹⁾ Second edition (1963) incorporating Amendments 1 (1967) and 2 (1977).