IEC 60384-26-1

Edition 1.0 2010-08

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Fixed capacitors for use in electronic equipment – Part 26-1: Blank detail specification – Fixed aluminium electrolytic capacitors with conductive polymer solid electrolyte – Assessment level EZ

Condensateurs fixes utilisés dans les équipements électroniques – Partie 26-1: Spécification particulière cadre – Condensateurs fixes électrolytiques en aluminium à électrolyte solide en polymère conducteur – Niveau d'assurance de la qualité EZ

IEC 60384-26-1:2010

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland
Email: inmail@iec.ch
Web: www.iec.ch

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Email: csc@iec.ch
Tél.: +41 22 919 02 11
Fax: +41 22 919 03 00

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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International Standard IEC 60384-26-1 has been prepared by IEC technical committee 40: Capacitors and resistors for electronic equipment

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

FDIS	Report on voting
40/2053/FDIS	40/2063/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 of the IEC 60384 series can be found, under the general title *Fixed capacitors for use in the electronic equipment*, 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 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- withdrawn,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.

FIXED CAPACITORS FOR USE IN ELECTRONIC EQUIPMENT –

Part 26-1: Blank detail specification – Fixed aluminium electrolytic capacitors with conductive polymer 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 specification nor shall they so be 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, date of issue and any further information required by the national system.

[3] The number and date of issue of the IEC or National Generic Specification.

[4] The number of the IEC or National blank detail specification.

Identification of the capacitor

[5] A short description of the type of capacitor.

[6] Information on typical construction (If applicable).

[7] Outline drawing with main dimensions which are of importance for interchange ability and / or reference to the national or international documents for outlines. Alternatively, this drawing may be given in an appendix to the detail specification.

[8] Application or group of applications covered and / or assessment level.

[9] Reference data on the most important properties, to allow comparison between the various capacitor types.

[1]	[2]
ELECTRONIC COMPONENTS OF ASSESSED QUALITY IN ACCORDANCE WITH: [3]	[4] IEC 60384-26-1
Outline drawing: (see Table 1) (… angle projection) [7]	[5] Aluminium electrolytic capacitors with conductive polymer solid electrolyte
	[6]
	[8] Assessment level(s): EZ

Information on the availability of components qualified to this detail specification is given in the qualified product list.

[9]

1 General data

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

See IEC 60384-26, 1.4.2

1.2 Dimensions

Table 1 – Case size reference and dimensions

Dimensions in millimeters

Case size reference							
	L	*W*	*H*	*d*			

NOTE 1 When there is no case-size reference, decline Table 1 and give the dimensions in Table 2 as Table 1.

NOTE 2 Indicate the dimensions as maximum dimension or as nominal dimensions with tolerance.

1.3 Rating and characteristics

Ratings and characteristics are as listed below.

– Nominal capacitance range (see Table 2)
– Tolerance on nominal capacitance
– Rated voltage (see Table 2)
– Climatic category
– Rated temperature
– Rated ripple current (see Table 3)
– Tangent of loss angle (see Table 3)
– Leakage current (see Table 3)
– Equivalent series resistance (see Table 3)
– Reverse voltage (if required in the detail specification)

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

Rated voltage					
Nominal capacitance	Case size	Case size	Case size	Case size	Case size

Table 3 – Characteristics

U_R	C_N	Tangent of loss angle at … °C, … Hz	Leakage current at … °C	Equivalent series resistance at … °C, … Hz	Rated ripple current at … °C, … Hz
V	µF	Hz	µA	Ω	mA or A

1.4 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 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, *Fixed capacitors for use in electronic equipment – Part 1: Generic specification*

IEC 60384-26:– [1] *Fixed capacitors for use in electronic equipment – Part 26: Sectional specification – Fixed aluminium electrolytic capacitors with conductive polymer solid electrolyte*

[1] To be published.

1.5 Marking

The marking of the capacitor and the package shall be in accordance with the requirements of IEC 60384-26, 1.6.

NOTE The details of the marking of the component and package should be given in full in the detail specification.

1.6 Ordering information

Orders for capacitors covered by this specification shall contain, in clear or in coded form, the following minimum information:

a) nominal capacitance;

b) tolerance on nominal capacitance;

c) rated d.c. voltage;

d) issue number and edition of the detail specification and type of capacitors.

1.7 Certified records of released lots

Required / not required

NOTE Clearly state a necessity for customer requests.

1.8 Additional information (not for inspection)

NOTE Clearly state a necessity for additional information.

1.9 Other requirements for generic or sectional specifications

NOTE Other requirements should be specified to those that are absolutely necessary. See Table 4.

Table 4 – Other requests (other characteristics)

This table is to be used for defining characteristics which are additional to, or more severe than, those given in the sectional specification.

2 Inspection requirements

2.1 Procedures

2.1.1 Qualification approval

For qualification approval, the procedures shall be in accordance with IEC 60384-26, 3.4.

2.1.2 Quality conformance inspection

For quality conformance inspection, the test schedule (Table 5) includes sampling, periodicity, severities and requirements. The formation of inspection lots is covered by IEC 60384-26, 3.5.1.

Table 5 – Test schedule for quality conformance inspection

Subclause number and test [a]	D or ND [b]	Test condition [a]	Sample number and criteria [c]			Requirements [a]
			IL	*n*	*c*	
Group A inspection (each lot) Subgroup A0 4.22 High surge current 4.4.1 Leakage current 4.4.2 Capacitance 4.4.3 Tangent of loss angle (tan δ) 4.4.4 Equivalent series resistance (ESR)	ND	Protective resistor: 1 000 Ω Frequency: ... Hz Bias voltage: ... V Frequency: ... Hz Bias voltage: ... V Frequency: 100 kHz	100 %[d]			See detail specification 0,2 $C_N U_R$(μA) or 500 μA (whichever is greater) Within specified tolerance See Table 3 See Table 3
Subgroup A1 4.3 Visual inspection	ND		S-3	f	0	See IEC 60384-26, 4.3.2
Subgroup A2 4.3 Dimensions (detail) [e]	ND		S-3	f	0	See Table 1
Group B inspection (each lot) 4.7 Solderability 4.7.2 Final measurement 4.18 Solvent resistance of marking [g]	D	Test method and severity: As in IEC 60068-2-20, Test Ta, method 1 Visual inspection Solvent: 2-propanol Solvent temp: 23 °C ± 5 °C Method: 1 Rubbing material: cotton wool Recovery time:	S-3	f	0	See 4.7.2

a Subclause numbers of tests and performance requirements refer to IEC 60384-26 and Clause 1 of this specification.

b In this table: D = destructive, ND = non-destructive

c In this table: *IL* = inspection level, *n* = sample size, *c* = acceptance criterion (permitted number of non-conforming items)
The permissible number of non-conforming items indicates acceptance criteria. In case non-conforming item(s) is equal or less than the number, this lot shall be accepted.

d 100 % testing shall be followed by re-inspection by sampling in order to monitor outgoing qualify level by non-confirming items per million. The sampling level shall be established by each manufacturer. For the calculation of parts per million values, any parametric failure shall be counted as a non-conforming item. If one or more non-conforming items occur in a sample, this lot shall be rejected.

e This test may be replaced by in-production testing if the manufacturer installs statistical process control (SPC) on dimensional measurements or other mechanisms to avoid parts exceeding the limits.

f Inspection levels are selected from IEC 60410.

g If required in the detail specification.

Table 5 *(continued)*

Subclause number and test [a]	D or ND [b]	Test condition [a]	Sample number and criteria [c]			Requirements [a]
			p	*n*	*c*	
Subgroup C1A	D		6	12	0	
4.3 Dimension (detail)						See detail specification
4.5.1 Initial measurement		Capacitance				
		Visual inspection				No visible damage
4.5 Terminal strength		Method and Criteria See IEC 60384-1, 4.13 Tension test Bending test				
4.6 Resistance to soldering heat		Non-preconditioning (Drying)				
4.6.1 Initial measurement		Capacitance				
4.6.2 Test		Test method and severity: As in IEC 60068-2-20, Test Tb, method 1				
4.6.3 Final measurement		Visual inspection				No visible damage Legible marking
		Leakage current [d]				See 4.4.1.2
		Capacitance				See detail specification
		Tangent of loss angle (tan δ)				See 4.4.3
		Equivalent series resistance (ESR)				See detail specification
4.17 Solvent resistance of components (If required in the detail specification)		Solvent: 2-propanol Solvent temp: 23 °C ± 5 °C Method: 2 Recovery time:				No visible damage Legible marking
Subgroup C1B	D					
4.7 Solderability		Test method: Solder bath method (See IEC 60068-2-20 Test Ta, Method 1) Non-preconditioning (Aging)				
4.7.2 Final measurement		Visual inspection				See 4.7.2
4.18 Solvent resistance of marking (If required in the detail specification)		Solvent: 2-propanol Solvent temp: 23 °C ± 5 °C Method: 1 Rubbing material: cotton wool Recovery time:				