

European Committee for Electrotechnical Standardization (CENELEC)
Cenelec Electronic Components Committee

CECC



Système Harmonisé d'Assurance de la Qualité
des Composants Electroniques

SPECIFICATION PARTICULIERE CADRE:

**CONDENSATEURS FIXES
A DIELECTRIQUE CERAMIQUE
DU TYPE A COUCHES D'ARRET
(DIELECTRIQUE CLASSE 3)**

Harmonized System of Quality Assessment for
Electronic Components

BLANK DETAIL SPECIFICATION:

**FIXED CERAMIC DIELECTRIC
CAPACITORS OF BARRIER
LAYER TYPE
(DIELECTRIC CLASS 3)**

Harmonisiertes Gütebestätigungssystem für
Bauelemente der Elektronik

VORDRUCK FÜR
BAUARTSPEZIFIKATION:

**FESTKONDENSATOREN
MIT KERAMISCHEM
DIELEKTRIKUM VOM
SPERRSCHICHTTYP
(DIELEKTRIKUM DER KLASSE 3)**

1 Edition
Issue
Ausgabe

CECC 31101

1981



Documents

Document Sharing Hub

Information about the System can be obtained from:



CECC General Secretariat
Stresemannallee 21
D-6000 Frankfurt/Main 70
Telefon (0611) 6 30 82 83
Telex 04-12871

or from the National Authorized Institutions
of the Member Countries listed
who can supply copies of:

1 The Basic Rules and Rules of
Procedure of the CECC

2 CECC and National Specifications
for the System

3 CECC 00 200: Qualified Products List (QPL)
(biannual issues January and July,
with three-monthly amendments)

4 CECC 00 300: CECC Publications and their
related national documents (biannual)

Belgium

Comité Electrotechnique Belge
Galerie Ravenstein 3
B-1000 Brussels

Denmark

Dansk Elektroteknisk Komite
Strandgade 36 set
DK-1401 Copenhagen K

France

Union Technique de l'Electricité
Participation française au CECC
12 Place des Etats-Unis
F-75783 Paris Cedex 16

Germany

Deutsche Elektrotechnische Kommission
im DIN und VDE
Stresemannallee 21
D-6000 Frankfurt/Main 70

Ireland

Electrotechnical Council of Ireland
The Industrial Research Centre
Ballymun Road
Dublin 9

Italy

Comitato Elettrotecnico Italiano
Viale Monza 259
I-20126 Milan

Netherlands

Nederlands Elektrotechnisch Comité
Polakweg 5
NL-2280 HV Rijswijk (ZH)

Norway

Norsk Elektroteknisk Komite
PO Box 7099
Homansbyen
N-Oslo 3

Sweden

Svenska Elektriska Kommissionen
Box 5177
S-10244 Stockholm

Switzerland

Comité Electrotechnique Suisse
Seefeldstrasse 301
CH-8008 Zürich

United Kingdom

British Electrotechnical Committee
British Standards Institution
2 Park Street
London W1A 2BS

Cette page bleue doit être insérée après la page de garde de la CECC 31 101 (Edition 1)

MODIFICATION 2 A LA CECC 31 101:
SPECIFICATION PARTICULIERE CADRE:
CONDENSATEURS FIXES A DIELECTRIQUE
CERAMIQUE DU TYPE A COUCHES D'ARRET
(DIELECTRIQUE CLASSE 3)

La modification suivante doit être effectuée à la main à l'Edition 1 (1981) de la CECC 31 101:

Page 7: Tableau 4A

Sous-Gruppe A2: au 4.6 "Tension de tenue":

Supprimer dans la colonne 3 " Point d'essai 1c) 100 V ou 3 U_R".

This blue page should be inserted after the title page of CECC 31 101 (Issue 1)

AMENDMENT 2 TO CECC 31 101:
BLANK DETAIL SPECIFICATION:
FIXED CERAMIC DIELECTRIC CAPACITORS
OF BARRIER LAYER TYPE (DIELECTRIC
CLASS 3)

The following amendment to Issue 1 (1981) of CECC 31 101 should be made in manuscript:

Page 7: Table 4A

Sub-Group A2: at 4.6 "Voltage proof":

Delete in the 3rd column "Test point 1c) 100 V or 3 U_R".

Dieses Blatt ist nach dem Titelblatt der CECC 31 101 (Ausgabe 1) einzusetzen

ÄNDERUNG 2 ZU CECC 31 101:
VORDRUCK FÜR BAUARTSPEZIFIKATION:
FESTKONDENSATOREN MIT KERAMISCHEM
DIELEKTRIKUM VOM SPERRSCHICHTTYP
(DIELEKTRIKUM DER KLASSE 3)

Bei der Ausgabe 1 (1981) der CECC 31 101 ist folgende Änderung handschriftlich vorzunehmen:

Seite 7: Tabelle 4A

Untergruppe A2: zu 4.6 "Spannungsprüfung":

In Spalte 3 "Prüfpunkt 1c) 100 V oder 3 U_R" streichen.

CECC 31 101 Edition 1 Modification 2 1984

CECC 31 101 Issue 1 Amendment 2 1984

CECC 31 101 Ausgabe 1 Änderung 2 1984



1st AMENDMENT TO CECC 31 101:

BLANK DETAIL SPECIFICATION:

FIXED CERAMIC DIELECTRIC CAPACITORS
OF BARRIER LAYER TYPE (DIELECTRIC
CLASS 3)

The following amendments to Issue 1 (1981)
of CECC 31 101 should be made in manuscript:

In Table 4A, Sub-Groups B1 and B2, the "D"
in the second column is to be replaced by "ND".

Add the following Note at the bottom of Table 4A:

Note: Specimens having passed the Group B
non destructive tests shall still satisfy
the tests of Group A.

CECC 31 101 Issue 1 Amendment 1 1983

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FOREWORD

The CENELEC Electronic Components Committee (CECC) is composed of those member countries of the European Committee for Electrotechnical Standardization (CENELEC) who wish to take part in a harmonized System for electronic components of assessed quality.

The object of the System is to facilitate international trade by the harmonization of the specifications and quality assessment procedures for electronic components, and by the grant of an internationally recognized Mark, or Certificate, of Conformity. The components produced under the System are thereby accepted by all member countries without further testing.

This blank detail specification has been formally approved by the CECC and has been prepared for those member countries taking part in the System who wish to issue national harmonized specifications for FIXED CERAMIC DIELECTRIC CAPACITORS (CLASS 3). It should be read in conjunction with document CECC 00 100 : Basic Rules (1974).

At the date of printing of this document the member countries of the CECC are Belgium, Denmark, France, Germany, Ireland, Italy, the Netherlands, Norway, Sweden, Switzerland and the United Kingdom. Copies of it can be obtained from the addressees shown on the inside cover.

PREFACE

This blank detail specification was prepared by CECC Working Group 3 : "Capacitors".

It is one of a series of blank detail specifications for fixed ceramic dielectric capacitors (class 3), all relating to the sectional specification CECC 31 100.

In accordance with the requirements of document CECC 00 100 it is based, wherever possible, on the Publications of the International Electrotechnical Commission.

As there are more than nine sectional specifications related to CECC 30 000: generic specification, Fixed Capacitors, the CECC Management Committee decided that these extra specifications should be numbered in the series 31 100, 31 200, 31 300 etc There is no generic specification numbered 31 000.

The text of this blank detail specification was circulated to the CECC for voting in the documents listed below and was ratified by the CECC Management Committee for printing as a CECC Specification:

<u>Document</u>	<u>Voting Date</u>	<u>Report on the Voting</u>
CECC(Secretariat)829	November 1979	CECC(Secretariat)891

CECC 31 101 Issue 1

KEY FOR PAGE 3

The numbers between square brackets on page 3 correspond to the following indications which should be given :

Identification of the harmonized detail specification

- [1] The name of National Standards Organization under whose authority the detail specification is drafted
- [2] The CECC Symbol and the number allotted by the CECC General Secretariat to the completed detail specification
- [3] The number and issue number of the national generic and sectional specifications
- [4] The national number of the detail specification, date of issue and any further information required by the national system.

Identification of the capacitor

- [5] A short description of the type of capacitor
- [6] Information on typical construction (see examples given on page 3)
- [7] Outline drawing with main dimensions which are of importance for interchangeability and/or reference to the national or international documents for outlines.
- [8] Quick reference data (see examples given on page 3) and level of quality assessment
- [9] Circuit diagram (if applicable).

(NATIONAL STANDARDS ORGANIZATION) [1]	CECC 31 101 - XXX  [2]
ELECTRONIC COMPONENTS OF ASSESSED QUALITY IN ACCORDANCE WITH : (Numbers of national generic and sectional specification) [3]	(National number of detail specification, date of issue, national type number, if any) [4]
DETAIL SPECIFICATION FOR FIXED CERAMIC DIELECTRIC CAPACITORS (CLASS 3) [5]	
TYPICAL CONSTRUCTION : tubular / plate / disc [6] (Examples) single / multilayer molded / dipped / unencapsulated wire / tag / screw terminations radial / axial terminations	
OUTLINE DRAWING [7]	QUICK REFERENCE DATA : RATED CAPACITANCE RANGE CAPACITANCE TOLERANCE RATED VOLTAGE RANGE CLIMATIC CATEGORY TEMPERATURE CHARACTERISTIC ASSESSMENT LEVEL [8]
Circuit diagram (if applicable) [9]	
See the relevant Qualified Products List for the availability of components qualified to this detail specification	

1. Dimensions

Table 1

Case size reference	Dimensions (1)					
	$\phi_{\max}$	$L_{\max}$	$H_{\max}$	$d \pm \text{tol.}$	(2)	(2)

(1) Body dimensions should preferably be expressed as maxima but, where necessary, be nominal with tolerance

(2) Other important dimensions may be included as additional information.

2. Specified method of mounting for vibration, shock and bump testing3. Ratings and characteristics

Sub-Class

Capacitance range

(See Table 2)

Capacitance tolerance(s)

(See Table 2)

Rated voltage

(See Table 2)

Rated temperature

Tangent of loss angle

Insulation resistance

Voltage proof

Temperature characteristic

Climatic category

Note 1 : Information on the above characteristics may be given in tabular form, if necessary.

Note 2 : Additional ratings and characteristics may be given, if applicable.

Table 2

Values of capacitance related to
case sizes and rated voltages

Rated capacitance	Tolerance (%)	Case size reference - voltage			
		(smallest)			(largest)

Note : Table 2 should be considered as an example only because it may be appropriate to have as many tables as there are voltages.

Table 2A

Temperature characteristics

Temperature range	Permissible capacitance variation	
	with no voltage applied	with U_R applied
-...°C/+...°C	+ ... %	+ ... %
	- ... %	- ... %

Table 3

Other characteristics

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

4. Related documents

Generic specification : CECC 30 000 }
Sectional specification : CECC 31 100 } (see Preface, p. 1)

5. Marking

The following details selected from those listed in 1.4 of CECC 31 100 shall be given on the capacitor.

6. Ordering information

Detail specification number
Case size reference
Rated capacitance
Tolerance on rated capacitance
Rated voltage
Temperature characteristic
Number of components ordered

Together with other information to identify a specific size, constructional details, etc. as necessary.

An example of ordering information shall be given.

7. Qualification approval and quality conformance inspection

For qualification approval test and quality conformance inspection, the test schedule severities and requirements given in the sectional specification, shall apply.

In addition Table 4 specifies the tests, severities and requirements that have to be given in the detail specification.

Note : Additional tests and
additional or more severe requirements
may also be specified in this table.

8. Certified test records

Required/not required.

Table 4A

Lot by lot inspection (Group A and B)

Clause number and test (1)	D or ND (3)	Conditions of test	IL (2)	AQL % (2)	Performance requirements (1)
<u>Sub-Group A1</u> 4.2 Visual examination Dimensions	ND	-	S4	2,5	No visible damage Marking legible See Table 1
<u>Sub-Group A2</u> 4.3 Capacitance 4.4 Tangent of loss angle 4.5 Insulation resistance 4.6 Voltage proof	ND	1 kHz, measuring voltage $\leq 0,1$ V 1 kHz, measuring voltage $\leq 0,1$ V Measuring voltage U_R for $10\text{ V} < U_R < 100\text{ V}$ Test point 1a) $1,25 U_R$ ~~Test point 1e) 100 V or $3 U_R$~~	II	1,0	Within tolerance limits $\tan \delta \leq 0,1$ See Table in 4.5 No breakdown no flashover
<u>Sub-Group B1</u> 4.10.2 Solderability	ND	No preliminary drying Bath method at 235°C or globule method Soldering iron method if others not appropriate	S3	2,5	Solder globule See detail specification Other method: Good tinning

(1) Clause numbers and performance requirements refer to CECC 31 100

(2) Inspection Levels (IL) and Acceptable Quality Levels (AQL) are selected from IEC 410

(3) In Table 4A and 4B : P = periodicity (in months)

n = sample size

c = acceptance criterion

D = destructive

ND = non-destructive

Note: Specimens having passed the Group B non destructive tests shall still satisfy the tests of Group A.

Table 4B
Periodic tests

Clause number and test (1)	D or ND (3)	Condition of test	P (3)	n (3)	c (3)	Performance requirements (1)
<u>Sub-Group C1a</u>	D		6	9	1	
4.9.1 Initial measurements		Special preconditioning Capacitance				
4.9.2 U : Robustness of terminations Ua ₁ : Tensile Ub : Bending Uc : Torsion (if applicable)		Ub: Method 2				No visible damage
4.9.3 Tb: Resistance to soldering heat		Method 1A or 1B as applicable Immersion time for Method 1A (5 s or 10 s)				
4.9.4 Final measurements		Visual examination Capacitance				No visible damage Capacitance change : See 4.9.4
<u>Sub-Group C1b</u>	D		6	18	1	
4.10.1 Initial measurements		Special preconditioning Capacitance				
4.10.3 Na : Rapid change of temperature		5 cycles Exposure: 30 min				
4.10.4 Fc : Vibration		Test method Severity Method of mounting				No visible damage
4.10.5 Ea : Shock or Eb : Bump		Method of mounting Severity				
4.10.6 Final measurements		Special preconditioning Visual examination Capacitance				No visible damage Marking legible Capacitance change: 4.10.6

(1) and (3) : See page 7

Clause number and test (1)	D or ND (3)	Condition of test	P (3)	n (3)	c (3)	Performance requirements (1)
<u>Group C1</u>	D	Combined samples of Sub-Group C1a and C1b	6	27	2	
4.11 Climatic sequence						
4.11.1 Initial measurements		Not required				
4.11.2 Ba: Dry heat		Temperature Duration : 16 h				
4.11.3 Db: Damp heat cyclic, first cycle		(not for category -/-/04) Temperature: 55 °C				
4.11.4 Aa: Cold		Temperature Duration : 2 h Visual examination				No visible damage
4.11.5 M : Low air pressure (if required)		Pressure : 85 mbar Duration : 1 to 2 min Temperature : 15 to 35 °C Voltage : U_R during 1 to 2 min				No breakdown No flashover
4.11.6 Db: Damp heat cyclic, remain- ing cycles		Temperature : 55 °C No voltage applied				
4.11.7 Final measurements		Visual examination tan δ Insulation resis- tance After special preconditioning Capacitance				No visible damage } See Table in 4.11.7
<u>Group C2</u>	D		6	15	1	
4.12 Ca: Damp heat steady state		Special preconditioning				
4.12.1 Initial measurements		Visual examination Capacitance				

(1) and (3) : See page 7

- 9 -

CECC 31 101 Issue 1