

CECC



**CONDENSATEURS FIXES
CHIPS POUR COURANT
CONTINU A DIELECTRIQUE EN
FILM DE POLYTEREPHTALATE
D'ETHYLENE METALLISE**

BLANK DETAIL SPECIFICATION:

**FIXED CHIP CAPACITORS WITH
METALLIZED ELECTRODES AND
POLYETHYLENE-
TEREPHTHALATE
FILM DIELECTRIC
FOR DIRECT CURRENT**

Harmonisiertes Gütebestätigungssystem für Bauelemente der Elektronik

VORDRUCK
FÜR BAUARTSPEZIFIKATION:

GLEICHSPANNUNGS-CHIP- KONDENSATOREN MIT METALLISIERTEN POLYETHYLEN- TEREPHTHALAT-FOLIEN ALS DIELEKTRIKUM

1 Edition
Issue
Ausgabe

CECC 32 201

1987

AVA Documents
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Cette page bleue doit être insérée après la page de garde de la CECC 32 201 (Edition 1) 1987

AMENDEMENT 1 A LA CECC 32 201:

SPECIFICATION PARTICULIERE CADRE:

CONDENSATEURS FIXES CHIPS POUR COURANT CONTINU A DIELECTRIQUE EN FILM DE POLYTEREPTHALATE D'ETHYLENE METALLISE

Supprimer les pages 7/8 et insérer les nouvelles pages 7/8.

Modifications en page 8:

- Tableau 4B, SOUS-GROUPE C2, 4.5, colonne 7: "≤ 10 %" a été changé en "≤ 2 %"
- Tableau 4B, SOUS-GROUPE C1: l'effectif de l'échantillon n et le critère d'acceptation c ont été changés en "2 4" (colonne 5) et "2" (colonne 6)
- Tableau 4B, SOUS-GROUPE C1, 4.6.2: le texte a été remplacé (colonne 3) et une note a été ajoutée (colonne 7)

Enregistrer cette modification sur la feuille jaune "Enregistrement des amendements".

Le texte de cet amendement a été soumis au vote du CECC dans les documents indiqués ci-dessous et a été ratifié par le Président du CECC pour être publié.

Documents: CECC(Secretariat)2637/2687
Dates de vote: Nov. 1990 / Février 1991
Rapports de vote: CECC(Secretariat)2746/2803

CECC 32 201 Edition 1 Amendement 1 (1992)

This blue page should be inserted after the title page of CECC 32 201 (Issue 1) 1987

AMENDMENT 1 TO CECC 32 201:

BLANK DETAIL SPECIFICATION :

FIXED CHIP CAPACITORS WITH METALLIZED ELECTRODES AND POLYETHYLENE-TEREPHTHALATE FILM DIELECTRIC FOR DIRECT CURRENT

Remove pages 7/8 and insert the new pages 7/8.

Amendments on page 8:

- Table 4B, Sub-Group C2, 4.5, 7th column: "≤ 10 %" has been changed to "≤ 2 %"
- Table 4B, Sub-Group C1: sample size n and acceptance criterion c to read "2 4" (5th column) and "2" (6th column) respectively
- Table 4B, Sub-Group C1, 4.6.2: the text in the 3rd column has been replaced and a note was added in the 7th column

Enter this amendment on the yellow "Record of amendments" sheet.

The text of this amendment was circulated to the CECC for voting in the documents indicated below and was ratified by the President of the CECC for publication.

Documents: CECC(Secretariat)2637/2687
Dates of voting: Nov. 1990 / Feb. 1991
Reports on the voting: CECC(Secretariat)2746/2803

CECC 32 201 Issue 1 Amendment 1 (1992)

Dieses blaue Blatt ist nach dem Titelblatt der CECC 32 201 (Ausgabe 1) 1987 einzufügen

ÄNDERUNG 1 ZU CECC 32 201:

VORDRUCK FÜR BAUARTSPEZIFIKATION:

GLEICHSPANNUNGS-CHIP-KONDENSATOREN MIT METALLISIERTEN POLYÄTHYLEN-TEREPHTHALAT-FOLIEN ALS DIELEKTRIKUM

Die Seiten 7/8 sind herauszunehmen und durch die neuen Seiten 7/8 zu ersetzen.

Änderungen erfolgten auf Seite 8:

- Tabelle 4B, Untergruppe C2, 4.5: "≤ 10 %" wurde geändert zu "≤ 2 %"
- Tabelle 4B, Untergruppe C1: Stichprobengröße n und Annahmehzahl c wurden geändert zu "2 4" (5. Spalte) und "2" (6. Spalte)
- Tabelle 4B, Untergruppe C1, 4.6.2: in der 3. Spalte wurde der Text durch einen neuen ersetzt und in der 7. Spalte wurde ein Vermerk eingefügt

Diese Änderung ist auf dem gelben Blatt "Verzeichnis der Änderungen" einzutragen.

Der Text dieser Änderung wurde dem CECC mit den unten aufgeführten Schriftstücken zur Abstimmung vorgelegt und vom Präsidenten des CECC zur Veröffentlichung freigegeben.

Schriftstücke: CECC(Sekretariat)2637/2687
Abstimmungsdaten: Nov. 1990 / Febr. 1991
Abstimmberichte: CECC(Sekretariat)2746/2803

CECC 32 201 Ausgabe 1 Änderung 1 (1992)

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 specification has been formally approved by the CECC, and has been prepared for those countries taking part in the System who wish to issue national harmonized specifications for **FIXED CHIP CAPACITORS WITH METALLIZED ELECTRODES AND POLYETHYLENE-TEREPHTHALATE FILM DIELECTRIC FOR DIRECT CURRENT**. It should be read in conjunction with the current regulations for the CECC System.

At the date of printing of this specification, the member countries of the CECC are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom, and copies of it can be obtained from the addresses shown on the blue fly sheet.

PREFACE

This specification was prepared by CECC WG 3 "Capacitors".

It is based, wherever possible, on the Publications of the International Electrotechnical Commission.

The text of this specification was circulated to the CECC for voting in the document(s) indicated (listed) below and was ratified by the President of the CECC for printing as a CECC Specification.

<u>Document</u>	<u>Date of Voting</u>	<u>Report on the Voting</u>
CECC(Secretariat)1917	April 1986	CECC(Secretariat)2016

Identification of the DS and the component

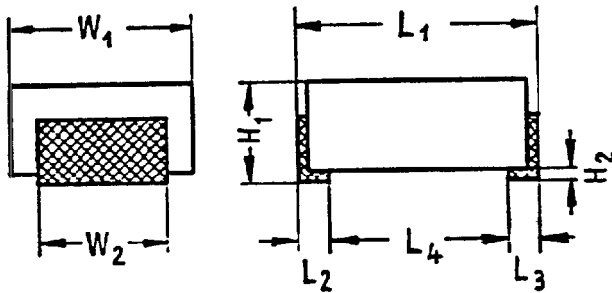
The first page of the DS should have the layout recommended on page 3.

The numbers in square brackets correspond to the indications to be completed thereunder:

- [1] The name of the National Standards Organization under whose authority the DS is published and, if applicable, the organization from whom the DS is available
- [2] The CECC symbol and the number allotted to the DS by the CECC General Secretariat.
- [3] The number and issue number of the CECC generic and sectional specification as relevant; also national reference if different.
- [4] If different from the CECC number, the national number of the DS, date of issue and any further information required by the national system, together with any amendment numbers.
- [5] A brief description of the component or range of components.
- [6] Information on typical construction (where applicable).

For [5] and [6] the text to be given in the DS should be suitable for an entry in CECC 00 200 (QPL) and CECC 00 300 (Library List).

- [7] An outline drawing with main dimensions which are of importance for interchangeability, and/or reference to the appropriate national or international document for outlines. Alternatively, this drawing may be given in an annex to the DS, but [7] should always contain an illustration of the general outer appearance of the component.
- [8] The level(s) of quality assessment covered by the DS.
- [9] Reference data giving information on the most important properties of the component which allow comparison between the various component types intended for the same, or for similar, applications.

Specification available from: (National Standards Organization) /1/	CECC number and mark  /2/
ELECTRONIC COMPONENTS OF ASSESSED QUALITY - DETAIL SPECIFICATION IN ACCORDANCE WITH: (Number of national generic and sectional specification) /3/	(National number of detail specification, /4/ date of issue, National type number, if any)
Outline and dimensions: /7/ (Example) The cross hatched areas are metallized	DETAIL SPECIFICATION FOR /5/ FIXED METALLIZED POLYETHYLENE- TEREPHTHALATE FILM DIELECTRIC CHIP CAPACITORS FOR DIRECT CURRENT
	TYPICAL CONSTRUCTION: /6/ (Examples) (metallized areas, strip, etc.)
	Assessment level E /8/

QUICK REFERENCE DATA: Rated capacitance range, capacitance tolerance, /9/
rated voltage range, climatic category, performance grade

Information about manufacturers who have components qualified to this detail
specification is available in the current CECC 00 200: Qualified Products
List.

1. General data

1.1 Recommended method of mounting

The capacitors are mounted by their terminations.
See 1.3.2 of the sectional specification CECC 32 200.

1.2 Dimensions

Table 1

Case size reference	Dimensions (in mm)							
	L ₁ max.	W ₁ max.	H ₁ max.	L ₂	L ₃	L ₄ min.	W ₂	H ₂ max.

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

Note 2: The dimensions shall be 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	
Max. a.c. voltage (if applicable)	
Max. pulse load (if applicable)	
Tangent of loss angle	
Insulation resistance	

Table 2

Rated voltage				
Category voltage (1)				
Rated capacitance	Case size	Case size	Case size	Case size

(1) If different from the rated voltage.

1.4 Related documents

Generic specification : CECC 30 000 (Issue 3)
Sectional specification : CECC 32 200 (Issue 1)

1.5 Marking

The marking of the capacitor and the packing shall be in accordance with the requirements of 1.5 of CECC 32 200.

Note: The details of the marking of the component and packing shall 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:

- (1) Rated capacitance
- (2) Tolerance on rated capacitance
- (3) Rated voltage
- (4) Number and issue reference of detail specification and style reference.
- (5) Packaging (bulk or taped; if taped, according to IEC 286-3)

1.7 Certified test records

Required/not required.

1.8 Additional information (not for inspection purposes)

1.9 Additional or increased severities or requirements to those specified in the generic and/or sectional specification

Note: Additional or increased requirements should be specified only when essential.

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.

2. Inspection requirements

2.1 Procedures

2.1.1 For Qualification Approval the procedures shall be in accordance with 3.4 of CECC 32 200.

2.1.2 For Quality Conformance Inspection the test schedule (Tables 4A and 4B) includes sampling, periodicity, severities and requirements. The formation of inspection lots is covered by 3.5.1 of CECC 32 200.

Notes to Tables 4A and 4B

Note 1: Clause numbers of tests and performance requirements refer to CECC 32 200.

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

Note 3: In Tables 4A and 4B: P = periodicity (in months)
n = sample size
c = acceptance criterion (permitted number of defectives)
D = destructive
ND = non-destructive

Note 4: The capacitors found defective after mounting shall not be taken into account when calculating the defectives for the following tests. They shall be replaced by spare capacitors.

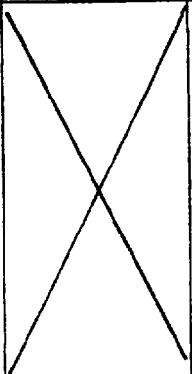
Table 4 A

Lot-by-lot inspection (Group A and B)

Clause number and test (1)	D or ND (3)	Conditions of test (1)	IL (2)	AQL %	Performance requirements (1)
<u>Sub-Group A1</u> 4.2 Visual examination Dimensions	ND		S4	2,5	No visible damage Legible marking, (if applicable), see 1.5 See Table 1 of this detail specification
<u>Sub-Group A2</u> 4.3.2 Capacitance 4.3.3 Tangent of loss angle 4.3.1 Voltage proof 4.3.4 Insulation resistance	ND	Frequency: 1 kHz Frequency: 1 kHz for all capacitance values Test point 1a Grade 1: 1,6 U _R Grade 2: 1,4 U _R Test point 1a	II	1,0	Within specified tolerance See Table in 4.3.3 No breakdown, self-healing breakdowns allowed See Table in 4.3.4
<u>Sub-Group B</u> 4.7 Solderability 4.7.2 Final measurements	D	No ageing. Immersion in non-activated flux for 2 s. Immersion in solder bath (235 ± 5)°C Duration: (2 ± 0,5) s Method : Visual examination 10 x magnification	S3	2,5	No visible damage Smooth and bright solder coating, few scattered imperfections permitted

(1), (2), (3) : see Notes on page 6

Table 4B
Periodic tests

Clause number and test (1)	D or ND (3)	Conditions of test (1)	P	n (3)	c	Performance requirements (1)
<u>Sub-Group C1</u> 4.6 Resistance to soldering heat 4.6.1 Initial measurements 4.6.2 Test conditions 4.6.3 Final measurements	D	Capacitance Fluxing: 2s Method:... (1 or 2) <u>1st part of sample:</u> (260+5)°C, (5+1)s <u>2nd part of sample:</u> (215+3)°C, (40+1)s Recovery: (24 ± 2)h Visual examination Conditions see 4.2.1 Capacitance	3	24	2	Only one defective for each immersion condition is permitted No signs of damage such as cracks $\left \frac{\Delta C}{C} \right \leq 3\%$ of value measured in 4.6.1
<u>Sub-Group C2</u> 4.5 Bond strength of the end face plating	D	Capacitance (with board in bent position) Visual examination	3	12	1	$\left \frac{\Delta C}{C} \right \leq 2\%$ of the value measured in 4.3.2 No visible damage
<u>Sub-Group C3</u> 4.1 Mounting (4) 4.2.1 Visual examination 4.3.2 Capacitance	D					As in detail specification $\left \frac{\Delta C}{C} \right \leq 2\%$ of value measured in Sub-Group A2

(1), (2), (3), (4): See notes on page 6

Clause number and test (1)	D or ND (3)	Conditions of test (1)	P	n	c	Performance requirements (1)
4.3.3 Tangent of loss angle		At 1 kHz for all capacitance values in addition at 10 kHz for $C_R \leq 1 \mu F$				As in 4.3.3 (Reference values for final measurements in Sub-Groups C3.1, C3.3 and C3.4)
4.3.4 Insulation resistance						As in 4.3.4
Sub-Group C3.1	D		6	27	1	
4.4 Adhesion		After mounting (see 4.1) force of 5 N applied for 10 ± 1 s				
4.4.3 Intermediate inspection		Visual examination				No visible damage
4.8 Rapid change of temperature						
4.8.1 Initial measurements		Not required, see Sub-Group C3				
4.8.2 Test conditions		5 cycles T_L = lower category temperature T_U = upper category temperature Exposure time: 30 min				
4.8.3 Intermediate inspection		Visual examination				No visible damage
4.9 Climatic sequence						
4.9.1 Initial measurements		Not required, see Sub-Group C3				
4.9.2 Dry heat		Upper category temp. Duration: 16 h				
4.9.3 Damp heat, cyclic, first cycle						
4.9.4 Cold		Lower category temp. Duration: 2 h				
4.9.5 Damp heat, cyclic, remaining cycles		Within 15 min after removal from test chamber U_R to be applied for 1 min				

(1), (3) : see Notes on page 6

Clause number and test (1)	D or ND (3)	Conditions of test (1)	P	n (3)	c	Performance requirements (1)
4.9.6 Final measurements		Visual examination Capacitance Tangent of loss angle at 1 kHz for $C_R > 1 \mu F$ at 10 kHz for $C_R \leq 1 \mu F$ Insulation resistance				No visible damage Legible marking $\left \frac{\Delta C}{C} \right \leq 5\%$ compared to values measured in Sub-Group C3 Increase of $\tan \delta$ Grade 1: $\leq 0,005$ $C \leq 1 \mu F$ $\leq 0,003$ $C > 1 \mu F$ Grade 2: $\leq 0,008$ $C \leq 1 \mu F$ $\leq 0,005$ $C > 1 \mu F$ compared to values measured in Sub-Group C3 $\geq 50\%$ of limits in 4.3.4
Sub-Group C3.2	D		6	15	1	
4.10 Damp heat, steady state						
4.10.1 Initial measurements		Not required, see Sub-Group C3				
4.10.2 Final measurements		Visual examination Capacitance Tangent of loss angle at 1 kHz for all capacitance values Insulation resistance				No visible damage $\left \frac{\Delta C}{C} \right \leq 5\%$ compared to values measured in Sub-Group C3 Increase of $\tan \delta$ $\leq 0,005$ compared to values measured in Sub-Group C3 $\geq 50\%$ of limits in 4.3.4

(1), (3) : see Notes on page 6

Clause number and test (1)	D or ND (3)	Conditions of test (1)	P	n	c	Performance requirements (1)
<u>Sub-Group C3.3</u> 4.11 Endurance 4.11.1 Initial measurements 4.11.2 Test conditions 4.11.5 Final measurements	D	Not required, see Sub-Group C3 See 4.11.2, 4.11.3 and 4.11.4 Visual examination Capacitance Tangent of loss angle at 1 kHz for $C_R > 1 \mu F$ at 10 kHz for $C_R \leq 1 \mu F$ Insulation resistance	3	15	1	No visible damage Legible marking $\left \frac{\Delta C}{C} \right \leq 5\%$ for Grade 1 $\leq 8\%$ for Grade 2 compared to values measured in Sub-Group C3 Increase of $\tan \delta$: Grade 1: $\leq 0,003$ $C \leq 1 \mu F$ $\leq 0,002$ $C > 1 \mu F$ Grade 2: $\leq 0,005$ $C \leq 1 \mu F$ $\leq 0,003$ $C > 1 \mu F$ compared to values measured in Sub-Group C3 $\geq 50\%$ of limits in 4.3.4
<u>Sub-Group C3.4</u> 4.12 Charge and discharge 4.12.1 Initial measurements 4.12.2 Test conditions	D	Not required, see Sub-Group C3 10 000 cycles	6	9	1	

(1), (3) : see Notes on page 6