

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

CECC



Système Harmonisé d'Assurance de la Qualité
des Composants Electroniques

SPECIFICATION INTERMEDIAIRE:

**NOYAUX EN OXYDES
MAGNÉTIQUES DESTINÉS AUX
APPLICATIONS
DE PUISSANCE**

Harmonized System of Quality Assessment for
Electronic Components

SECTIONAL SPECIFICATION:

**MAGNETIC OXIDE CORES FOR
POWER APPLICATIONS**

Harmonisiertes Gütebestätigungssystem für
Bauelemente der Elektronik

RAHMENSPEZIFIKATION:

**KERNE AUS MAGNETISCHEN
OXIDEN FÜR
ANWENDUNGEN IN DER
LEISTUNGSELEKTRONIK**

1 Edition
Issue
Ausgabe

CECC 25300

Cette page bleue doit être insérée après la page de garde de la CECC 25 300 (Edition 1)

PREMIERE MODIFICATION A LA CECC 25 300:

SPECIFICATION INTERMEDIAIRE:

NOUVEAUX EN OXIDES MAGNETIQUES DESTINES AUX APPLICATIONS DE PUISSANCE

Les modifications suivantes doivent être effectuées à la main à l'Edition 1 (1980) de la CECC 25 300:

Page 3, § 2.1
Supprimer "CEI 367-1X (19XX) Xème complément ..." et remplacer par "CEI 367-1E (1980) 5ème complément ... "

Page 5, § 5.2
Premier alinéa :
supprimer "transformateurs de puissance" et remplacer par "applications de puissance"

Page 9
Troisième colonne :
supprimer "transformateurs de puissance" et remplacer par "applications de puissance"

This blue page should be inserted after the title page of CECC 25 300 (Issue 1)

FIRST AMENDMENT TO CECC 25 300:

SECTIONAL SPECIFICATION:

MAGNETIC OXIDE CORES FOR POWER APPLICATIONS

The following amendments to Issue 1 (1980) of CECC 25 300 should be made in manuscript:

Page 3, § 2.1
Delete "IEC 367-1X (19XX) Xth Supplement ..." and insert "IEC 367-1E (1980) 5th Supplement ... "

Page 5, § 5.2
First sentence:
delete "power transformers" and insert "power applications"

Page 9
Third box:
delete "power transformers" and insert "power applications"

Dieses blaue Blatt ist nach dem Titelblatt der CECC 25 300 (Ausgabe 1) einzusetzen

ERSTE ÄNDERUNG ZUR CECC 25 300 :

RAHMENSPEZIFIKATION:

KERNE AUS MAGNETISCHEN OXIDEN FÜR ANWENDUNGEN IN DER LEISTUNGSELEKTRONIK

Die folgenden Änderungen zu Ausgabe 1 (1980) der CECC 25 300 sind handschriftlich einzufügen:

Seite 3, § 2.1
"IEC 367-1X (19XX) Xth Supplement ..." ist zu streichen und zu ersetzen durch "IEC 367-1E (1980) 5th Supplement ... "

Seite 5, § 5.2
Erster Satz:
das Wort "Leistungsüberträger" ist zu streichen und durch "Anwendungen in der Leistungselektronik" zu ersetzen

Seite 9
Dritter Kasten:
das Wort "Leistungsüberträger" ist zu streichen und durch "Anwendungen in der Leistungselektronik" zu ersetzen

Nur im deutschen Text:

Seite 2
Der 'Einleitung' ist folgender Absatz hinzuzufügen:
"Die vorliegende Spezifikation enthält die erste Seite sowie die Prüfpäne, die bei der Erstellung von Bauteilspezifikationen zu verwenden sind. Jeder Prüfpän, der mit einer CECC-Nummer versehen und gemäß den in Abschnitt 5 dieser Spezifikation enthaltenen Informationen erstellt wurde, bildet eine Bauteilspezifikation."

CECC 25 300 Edition 1 Modification 1 (1981)

CECC 25 300 Issue 1 Amendment 1 (1981)

CECC 25 300 Ausgabe 1 Änderung 1 (1981)



Documents

Document Sharing Hub

E R R A T U M :

Texte Français

Rien à changer

English Text

No changes

Deutscher Text

Wie folgt ändern:

Seite 3, Hauptabschnitt 1 - Geltungsbereich

in der 5. Zeile sind die Worte

"Sperrschwinger und"

zu streichen.

CECC 25 300 Edition 1
Issue 1 1980
Ausgabe 1

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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 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 document 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 MAGNETIC OXIDE CORES FOR POWER APPLICATIONS. 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, and copies of it can be obtained from the addressees shown on the inside cover.

PREFACE

This sectional specification was prepared by CECC Working Group 12 : "Magnetic Components".

It is one of a series of sectional specifications all relating to the generic specification printed as CECC 25 000.

In accordance with the requirements of document CECC 00 100, it is based, wherever possible, on the Recommendations of the International Electrotechnical Commission and in particular on IEC Publication 367 : Cores for inductors and transformers for telecommunications.

The text of this sectional specification was circulated to the CECC for voting in document CECC (Secretariat) 800 in March 1979, and following ratification of the Report on the Voting in CECC (Secretariat) 870 in January 1980, was approved by the CECC Management Committee for printing as a CECC Specification.

This document contains the front page and test schedules to be used in preparation of detail specifications. Each test schedule, referenced by a CECC number, when taken with the appropriate information in clause 5 of this specification, forms a detail specification.

SECTION 1 - SCOPE

This sectional specification lists the characteristics, ratings and inspection requirements for magnetic cores of assessed quality for power applications and chokes intended for professional and industrial applications, excluding linear and tuned transformers and mains frequency power transformers. It selects from the generic specification CECC 25 000 the appropriate methods of test to be used in detail specifications derived from this specification.

SECTION 2 - GENERAL2.1 Related documents

IEC 68	-	Basic environmental testing procedures (see CECC 00 006).
IEC 68-2-1	(1974)	Tests A : Cold.
IEC 68-2-2	(1974)	Tests B : Dry heat.
IEC 205	(1966)	Calculation of the effective parameters of magnetic piece parts.
IEC 424	(1973)	Guide to the specification of limits for physical imperfections of parts made from magnetic oxides.
IEC 431	(1973)	Dimensions of square cores (RM cores) made of magnetic oxides and associated parts.
IEC 431A	(1976)	First supplement.
IEC 431B	(1978)	Second supplement.
IEC 367-1E	(1980)	5th Supplement to IEC 367-1 (1971): Cores for inductors and transformers for telecommunications. Part 1 : Measuring methods.
IEC 647	(1979)	Dimensions for magnetic oxide cores intended for use in power supplies (EC-cores).
CECC 25 000	(1976)	Generic specification: Inductor and transformer cores for telecommunications.

2.2 Classification

A core is classified by :

- shape : for example U core, E core, EC core, RM core, ...
- size : for example : 55 x 28 x 21, EC 41, RM 14, ...
- class (combined electromagnetic properties): since no systematic classification of the electromagnetic properties is available in CECC, each detail specification shall clearly define the class or material grade to which it applies.

It may also state the appropriate class designation.

Normally, a detail specification will cover cores of one shape, size and class.

SECTION 3 - QUALITY ASSESSMENT PROCEDURES

The tests given in Table 1 shall be included in each detail specification for magnetic oxide power transformer cores.

These tests shall be carried out in accordance with the measuring methods presented in Section 4 of CECC 25 000 or as listed in 2.1.

Visual examination and measurement of dimensions may be carried out on half cores, all other tests being carried out on a set.

Amplitude permeability or flux density and total (power) loss shall be measured on ungapped cores.

TABLE 1 - TESTS FOR QUALITY ASSESSMENT INSPECTION

Group	TEST		Inspection level	AQL %
A Lot-by-lot	Visual examination Marking		I	1,5
	Dimensions	Primary	I	1,0
		Secondary	S3	4,0
B Lot-by-lot	Inductance factor or air gap		S3	4,0
	Amplitude permeability μ_a or Flux density B_e *		S3	4,0
	Total (power) loss		S3	4,0
C Periodic - on one delivery batch	Superimposed direct current *		5 sets 1 defective permitted every 12 months	
	Compression load test		15 cores 1 defective permitted every 12 months	

* This sub-group may be omitted from the detail specification when not relevant.

SECTION 4 - ADDITIONAL INFORMATION

Additional information in the form of curves and graphs may be given by the manufacturer. This should not be used for inspection purposes and is supplied for information only.

SECTION 5 - BLANK DETAIL SPECIFICATION

The following information and requirements shall be prescribed in each detail specification together with the required values.

The numbers between square brackets on page 9 correspond to the following indications which should be given.

The general data necessary to identify the harmonized detail specification and the component shall preferably be presented as shown in 5.9.

5.1 Identification of the harmonized detail specification

The name of the National Standards Organization under whose authority the detail specification is drafted [1]

The CECC Symbol and the number allotted to the national detail specification by the CECC General Secretariat [2]

The number and issue number of the national generic and sectional specifications [3]

The national number of the detail specification, date of issue and any further information required by the national System, together with any amendment numbers, if issued. [4]

5.2 Identification of the core

Magnetic core intended for power applications class : [5]

Typical construction (core shape and size) [6]

Outline drawing and dimensions (cf. 5.5.2) [7]

Application or group of applications covered by the detail specification [8]

5.3 Limiting conditions (not for inspection purposes)

- Operating conditions : maximum temperature ;
other requirements for mechanical and environmental conditions in which the component is to operate shall be stated in terms of limits of the relevant characteristics.

Limiting values of temperature shall preferably be chosen from IEC 68-2-1 and IEC 68-2-2. For example : "the temperature range for amplitude permeability shall be from - 10°C to + 100°C."

Any interdependance of these conditions shall also be stated.

- Storage conditions : temperature range ;
other requirements for mechanical and environmental conditions in which the component is to be stored, shall be stated in terms of limits of the relevant characteristics.

Limiting values of temperature shall preferably be chosen from IEC 68-2-1 and IEC 68-2-2. For example : "the temperature range shall be from - 55°C to + 100°C".

5.4 Marking of component and package

5.4.1 Component (minimum information) *

- Class or grade of material (may be in coded form)
- Manufacturer's component designation where physically possible

5.4.2 Package (minimum information in the following sequence)

- Detail specification number
- Manufacturer's component designation and name of manufacturer or ideogram
- Manufacturer's batch identification code
- Quantity
- A_L or air gap (if relevant)

5.5 Characteristics

5.5.1 Visual examination

The condition, workmanship and finish shall be satisfactory as determined by visual examination. The acceptance of any physical imperfections shall be judged on the basis of IEC 424. The permissible percentage of chipping shall be stated in the detail specification.

The marking shall be clearly legible as determined by visual examination.

5.5.2 Dimensions

Primary dimensions : i.e. those dimensions controlled by the gauge(s) defined in the appropriate IEC Publication, for example, for EC cores : IEC 647. In the case where the dimensions of the cores are not defined in an IEC Publication, primary dimensions are those dimensions that are essential in the application. The remaining dimensions are secondary dimensions. Secondary dimensions : i.e. those dimensions shown in the appropriate IEC Publication but not controlled by the gauge(s).

5.5.3 Effective parameters

At least two of the effective parameters e.g. A_e , l_e ; the values of these shall be calculated in accordance with IEC 205.^e In addition A_{min} if the cross section is significantly non uniform. [9]

* Cores supplied as matched sets can be marked only on one half-core.

5.5.4 Electrical properties

Specify clamping force and test coils for electrical measurements.

(1) Inductance factor A_L

Test in accordance with the requirements of 4.3, 4.5 and 4.6 of CECC 25 000

Specify $\hat{B}_e$

Specify θ_1 and f .

(2) Amplitude permeability μ_a or flux density $\hat{B}$

Test in accordance with the requirements of 4.17 of CECC 25 000

Specify $\hat{B}$ for μ_a
 $\hat{H}_e$ for $\hat{B}$

Specify θ_2 and f .

(3) Effective total (power) loss

Test in accordance with the requirements of 4.16 of CECC 25 000

Specify f , B , θ_1 and θ_2 .

(4) Superimposed direct current

Test in accordance with the requirements of clause 15 of IEC 367-1

Specify direct current, $\hat{B}_e$ and f .

5.5.5 Mechanical properties

Compression load test.

Test in accordance with 4.11 of CECC 25 000.

5.6 Certified test records

The certified test records shall contain attributes information from Group B and Group C tests in accordance with 3.6 of CECC 25 000.

When certified test records are not prescribed in the detail specification, this shall be indicated by the statement "not applicable".

5.7 Additional information

As appropriate : for example, application information.

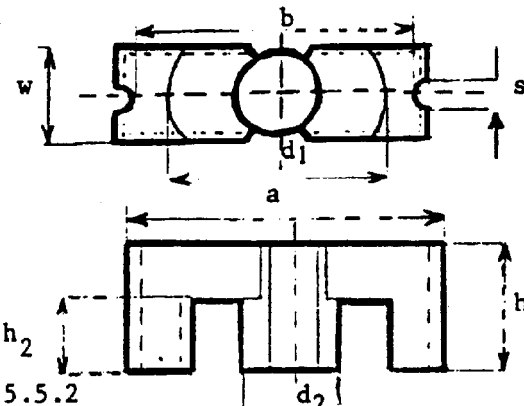
5.8 Ordering information

5.8.1 Detail specification number

5.8.2 Manufacturer's component designation

5.8.3 Other information specified by the manufacturer to identify the product

5.9 Format of the detail specification

[1]	page .. of ..	CECC 25 301 [2] - ...																												
[3] ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH	[4]																													
DETAIL SPECIFICATION for [5] ~~Magnetic oxide core for power applications~~ transformers and chokes Class : Typical construction (core shape and size) [6]																														
for example [7]  Dimensions 5.5.2 <table border="1" style="margin-left: auto; margin-right: auto; text-align: center;"> <thead> <tr> <th>in mm</th> <th>a</th> <th>b</th> <th>d₁</th> <th>d₂</th> <th>h₁</th> <th>h₂</th> <th>w</th> <th>s</th> </tr> </thead> <tbody> <tr> <td>max</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>min</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> Note by asterisks primary dimensions		in mm	a	b	d ₁	d ₂	h ₁	h ₂	w	s	max									min									[8]	
in mm	a	b	d ₁	d ₂	h ₁	h ₂	w	s																						
max																														
min																														
[9] Effective parameters 5.5.3 <table border="1" style="margin-left: auto; margin-right: auto; text-align: center;"> <thead> <tr> <th>A_e</th> <th>l_e</th> <th>V_e</th> <th>C_l</th> <th>A_{min}</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			A _e	l _e	V _e	C _l	A _{min}																							
A _e	l _e	V _e	C _l	A _{min}																										
See the relevant Qualified Products List for availability of components made to this specification																														

5.3 Limiting conditions (not for inspection purpose)

- Operating conditions :
maximum temperature
- Storage conditions
temperature range

5.4 Marking of components and package

5.4.1 Component

- Class or grade of material

5.4.2 Package

- Detail specification number
- Manufacturer's component designation and name of manufacturer or ideogram
- Manufacturer's batch identification code
- Quantity
- A_L or air gap

5.5 Characteristics

5.5.1 Visual examination

5.5.2 Dimensions

5.5.3 Effective parameters

5.5.4 Electrical properties

5.5.5 Mechanical properties

5.6 Certified test records

5.7 Additional information

5.8 Ordering information

5.8.1 Detail specification number

5.8.2 Manufacturer's component designation

5.8.3 Other information specified by the manufacturer to identify the product

TEST SCHEDULE FOR MAGNETIC OXIDE CORES
INTENDED FOR POWER APPLICATIONS

Groups A and B inspection (lot-by-lot)									
Paragraph numbers and tests (see Note 1)	D or ND	Conditions of test	I L	AQL (see Note 2)	Performance requirements				
<u>Group A Inspection</u>									
<u>Sub-group A1</u>									
5.5.1 Visual examination Marking	ND	without the use of special magnifying aids	I	1,5%					
<u>Sub-group A2</u>									
5.5.2 Dimensions (mm)	ND		I	1%					
Primary									
Secondary			S3	4%					
<u>Group B Inspection</u>									
<u>Sub-group B1</u>					No gap	A_{L1}	A_{L2}	A_{L3}	Units
5.5.4.1	ND	Test coil N = ϕ = mm f (kHz) = $\hat{B}_e$ (mT) = Inductance factor Tolerance	S3	4%	Air gap				
					+	+	+	+	nH
					+	+	+	+	%
<u>Sub-group B2</u>									
5.5.4.2 Amplitude permeability μ_a or Flux density $\hat{B}$	ND	Test coil N : f (kHz) U_{eff} (v) or I_{eff} (A) θ_2 $\hat{B}$ or H_e	S3	4%	+				mT
					+				
<u>Sub-group B3</u>					θ_1	θ_2			
5.5.4.3 Total (power) loss	ND	Test coil N : Clamping force : U_{eff} (V) B^* θ_1 and θ_2 f (kHz)	S3	4%	+	+			W
					+	+			

* $\hat{B}$ calculated for A_{min}