

Harmonized system of quality assessment for electronic components

Sectional specification: Wirewound surface mounting inductors

The European Standard EN 129100 : 1993, together with its amendment A1 : 1995, has the status of a British Standard

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to to Technical Committee EPL/51, Transformers, inductors, magnetic components and ferrite materials, upon which the following bodies were represented:

EEA (the Association of Electronics, Telecommunications and Business Equipment Industries)
Electronic Components Industry Federation
Ministry of Defence
National Supervising Inspectorate
Power Supply Manufacturers' Association — PSMA (BEAMA Ltd.)

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Summary of pages

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National foreword

|| This British Standard has been prepared by Technical Committee EPL/51 and is the English language version of EN 129100 : 1993 *Sectional specification: Wirewound surface mounting inductors*, together with its amendment A1 : 1995, published by the Electronic Components Committee (CECC) of the European Committee for Electrotechnical Standardization (CENELEC).

Cross-references

Publication referred to	Corresponding British Standard
EN 129000 : 1993 + A1 : 1995	BS EN 129000 : 1996 <i>Harmonized system of quality assessment for electronic components. Generic specification: fixed RF wound inductors</i> (Includes amendment A1 to EN 129000)
IEC 68	{ BS EN 60068 <i>Environmental testing</i> BS 2011 <i>Environmental testing</i>
HD 143.3 S2 (IEC 286-3 : 1991)	BS 6062 <i>Packaging of electronic components for automatic handling</i> Part 3 : 1993 <i>Specification for packaging of leadless components on continuous tapes</i>

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Descriptors: Quality, electronic components, inductors

English version

Sectional specification:
Wirewound surface mounting inductors
(includes amendment A1 : 1995)

Spécification intermédiaire:
(A présent, cette spécification n'existe pas en français)

Rahmenspezifikation:
Drahtgewickelte oberflächenmontierbare Spulen
(enthält Änderung A1 : 1995)

This European Standard was approved by CENELEC Electronic Components Committee (CECC) on 23 April 1992. 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom. The membership of the CECC is identical, with the exception of the national electrotechnical committees of Greece, Iceland and Luxembourg.

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 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 recognised Mark, or Certificate, of conformity. The components produced under the System are thereby acceptable in all member countries without further testing.

This specification was prepared by CECC WG 12, Magnetic components: Magnetic wound components.

The text of the draft based on document CECC (Secretariat) 2864 was submitted to the formal vote; together with the voting report, circulated as document CECC (Secretariat) 3057, it was approved by CECC as EN 129100 on 23 April 1992.

The following dates were fixed:

- latest date of announcement of the EN at national level (doa) 1993-06-17
- latest date of publication of an identical national standard (dop) 1993-12-17
- latest date of declaration of national standard's obsolescence 1993-12-17
- latest date of withdrawal of conflicting national standards (dow) 2003-06-17

Foreword of amendment A1

This amendment was prepared by Working Group CLC/TC CECC/WG DE.

The text of the draft based on document CECC (Secretariat) 3585 was submitted to the formal vote; together with the voting report, circulated as document CECC (Secretariat) 3634, it was approved as amendment A1 to EN 129100 : 1993 on 1994-12-28.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1995-10-24
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 1996-10-24

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SECTION 1 - GENERAL

1.1 Scope

This specification applies to wire wound fixed rectangular shaped surface mounting (SM) inductors with a magnetic or non-magnetic core for use in electronic equipment. These inductors are intended to be mounted directly onto substrates or boards by their terminations.

It prescribes preferred ratings and characteristics and selects from CECC 29 000 (EN 129 000:1993) the appropriate quality assessment procedures and measuring methods and gives general performance requirements for this type of inductor.

1.2 Related documents

ISO 3	Preferred numbers - Series of preferred numbers
IEC 51(Sec)257	Marking codes for inductors
IEC 63	Preferred number series for resistors and capacitors
Amendment No. 1	
Amendment No. 2	
IEC 68	Basic environmental testing procedures
CECC 29 000	Generic specification: Fixed RF wound inductors
IEC 410	Sampling plans and procedures for inspection by attributes
IEC 286-3	Packaging of components for automatic handling; Part 3: Packaging of leadless components on continuous tapes.

Note: The above references apply to the current editions except for IEC 68.

1.3 Information to be given in a detail specification

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

Detail specifications shall not specify requirements inferior to those of the generic, sectional or blank detail specification. When more severe requirements are included, they shall be listed in 1.9 of the detail specification and indicated in the test schedules, for example by an asterisk.

Note: The information given in 1.3.1 may for convenience be presented in tabular form.

The following information shall be given in each detail specification and the values quoted shall preferably be selected from those given in the appropriate clause of this sectional specification.

1.3.1 Outline drawing and dimensions

There shall be an illustration of the inductor as an aid to easy recognition and for comparison of the inductor with others. Dimensions and their associated tolerances, which affect interchangeability and mounting, shall be given in the detail specification. All dimensions shall be stated in mm.

Normally the numerical values shall be given for the length, the width and height of the body. When necessary, for example when a number of items (sizes and inductance ranges) is covered by a detail specification, the dimensions and their associated tolerances shall be placed in a table below the drawing.

When the configuration is other than described above, the detail specification shall state such dimensional information as will adequately describe the inductor.

1.3.2 Mounting

The detail specification shall give guidance on method of mounting for normal use. Mounting for test and measurement purposes (when required) shall be in accordance with 4.1.

1.3.3 Ratings and characteristics

The ratings and characteristics shall be in accordance with the relevant clauses of this specification, together with the following:

(1) Rated inductance range

See 2.2.1

Note: When products approved to the detail specification have different ranges, the following statement should be added: "The range of inductance values available in each size is given in the current CECC 00 200 (Register of Firms, Products and Services Approved under the CECC System)".

(2) Particular characteristics

Additional characteristics may be listed, when they are considered necessary to specify adequately the component for design and application purposes.

1.3.4 Marking

The detail specification shall specify the content of the marking on the inductor and on the package. Deviations from 1.5 shall be specifically stated.

1.4 Terminology

In addition to the applicable terms and definitions of CECC 29 000 (EN 129 000:1993) the following definitions apply:

1.4.1 Surface mounting inductor

An inductor whose small dimensions and nature or shape of terminations make it suitable for surface mounting on hybrid circuits or printed boards.

1.4.2 Performance grade 1 inductors (long life)

Inductors for long-life applications with stringent requirements for the electrical parameters.

1.4.3 Performance grade 2 inductors (general purpose)

Inductors for general application, where the stringent requirements for grade 1 inductors are not necessary.

1.4.4 Rated current (I_R)

The maximum r.m.s. value of the current, at which an inductor may be operated continuously at the rated temperature.

Note: The current may consist of d.c. current only, a.c. current only or of a combination of both.
For testing purposes d.c. current is mandatory.
High frequencies require a reduction of current in regard to temperature rise by magnetic and skin effect losses.

1.4.5 Incremental current (I_{CR})

That value of polarising direct current which when superimposed on the alternating measuring current will cause a reduction in measured inductance value of 10 %.

1.5 Marking

1.5.1 The information given in the marking is normally selected from the following list; the relative importance of each item is indicated by it's position in the list:

- 1) Rated inductance (in clear or code)
- 2) Tolerance on rated inductance
- 3) Manufacturer's name or trade mark
- 4) Manufacturer's type designation
- 5) Year and month (or week) of manufacture
- 6) Rated current
- 7) Climatic category
- 8) Reference to the detail specification
- 9) CECC Mark

1.5.2 When the detail specification requires marking the inductors shall be clearly marked with as many as possible of the above items as is considered useful. Any duplication of information in the marking on the inductor should be avoided.

If coded marking is applied, the codes as given in IEC xxx (at present 51(Sec)257) shall be used.

1.5.3 The package containing the inductor(s) shall be clearly marked with all the information listed in 1.5.1.

1.5.4 Any additional marking shall be so applied that no confusion can arise.

SECTION 2 - PREFERRED RATINGS AND CHARACTERISTICS

2.1 Preferred climatic categories

The inductors covered by this specification are classified into climatic categories according to the general rules given in IEC 68-1.

The lower and upper category temperature and the duration of the damp heat, steady state test shall be chosen from the following:

Lower category temperature: - 55 °C, - 40 °C, - 25 °C

Upper category temperature: + 85 °C, + 100 °C, + 125 °C and + 150 °C

Duration of the damp heat, steady state test: 4, 10, 21 and 56 days

Note: With continuous operation at 125 °C in excess of the endurance test time, accelerated ageing has to be considered (see detail specification).

The severities for the cold and dry heat tests are the lower and the upper category temperatures respectively.

2.2 Preferred values of ratings

2.2.1 Rated inductance (L_R)

Preferred values of rated inductance are:

1 - 1,2 - 1,5 - 1,8 - 2,2 - 2,7 - 3,3 - 3,9 - 4,7 -
5,6 - 6,8 - and 8,2 and their decimal multiples.

These values conform to the E 12 series of preferred values given in IEC 63: Preferred number series for resistors and capacitors.

2.2.2 Tolerance on rated inductance

The preferred tolerance on rated inductance is $\pm 10 \%$.
If other tolerances are required they shall be preferably either $\pm 5 \%$ or $\pm 20 \%$.