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2004-11

Voorbeeld
Preview

Marking codes for resistors and capacitors

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International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch

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MARKING CODES FOR RESISTORS AND CAPACITORS

FOREWORD

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International Standard IEC 60062 has been prepared by IEC technical committee 40: Capacitors and resistors for electronic equipment.

This fifth edition cancels and replaces the fourth edition published in 1992 and its amendment 1 (1995) and constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) completion of the existing code systems for
   - resistors with a three-character code system and a four-character code system;
   - temperature coefficient of resistance with a letter code system;
   - data code system for capacitors and resistors with the 10-year cycle code (two-character code), the 20-year cycle code (four-digit code), the 10-year cycle code (four-digit code), and a one-character code – four-year cycle.
b) extension with a code letter system for the dielectric material of plastic film and paper capacitors.

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

FDIS	Report on voting
40/1465/FDIS	40/1486/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.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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

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MARKING CODES FOR RESISTORS AND CAPACITORS

1 Scope

This International Standard specifies marking codes for resistors and capacitors and indexes for the dielectric material and the electrodes of plastic film and paper capacitors.

The code specified in Clause 3 gives a colour coding for fixed resistors.

It is intended for use with the values of the E6 to E192 series as specified in IEC 60063.

The code specified in Clause 4 gives a system for marking resistance and capacitance values by means of letters and digits.

The code specified in Clause 5 gives a system for marking the tolerance on resistance and capacitance values by means of a letter.

The code specified in Clause 6 gives systems for marking the date codes on capacitors and resistors by means of letters and digits.

The code (index) specified in Clause 7 gives a coding system for the dielectric material.

2 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 60063:1963, *Preferred number series of resistors and capacitors*

ISO 1043-1:2001, *Plastics – Symbols and abbreviated terms – Part 1: Basic polymers and their special characteristics*

ISO 8601:2000, *Data elements and interchange formats – Information interchange – Representation of dates and times*

3 Colour code for fixed resistors

3.1 The colour code for indicating resistance values to two and three significant figures, tolerances and, if needed, the indication of the temperature coefficient of fixed resistors shall be as given in 3.2, 3.3 and 3.4.

3.2 The first band shall be the one nearest to the end of the resistor and the bands shall be so placed and spaced that there can be no confusion in reading the coding.

3.3 Any additional coding shall be so applied as not to confuse the coding for value and tolerance.

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3.4 Colour code marking for fixed resistors

Table 1 – Values corresponding to colours

Colour	Significant figures	Multiplier	Tolerance	Temperature coefficient 10^{-6}/K
Silver	-	10^{-2}	±10 %	-
Gold	-	10^{-1}	±5 %	-
Black	0	1	-	±250
Brown	1	10	±1 %	±100
Red	2	10^{2}	±2 %	±50
Orange	3	10^{3}	±0,05 %	±15
Yellow	4	10^{4}	-	±25
Green	5	10^{5}	±0,5 %	±20
Blue	6	10^{6}	±0,25 %	±10
Violet	7	10^{7}	±0,1 %	±5
Grey	8	10^{8}	-	±1
White	9	10^{9}	-	-
None	-	-	±20 %	-

For the indication of temperature coefficients according to the code as described above one of the following methods shall be used:

a) a colour band as the sixth and wider band;

b) an interrupted colour band as the sixth band;

c) a helix.

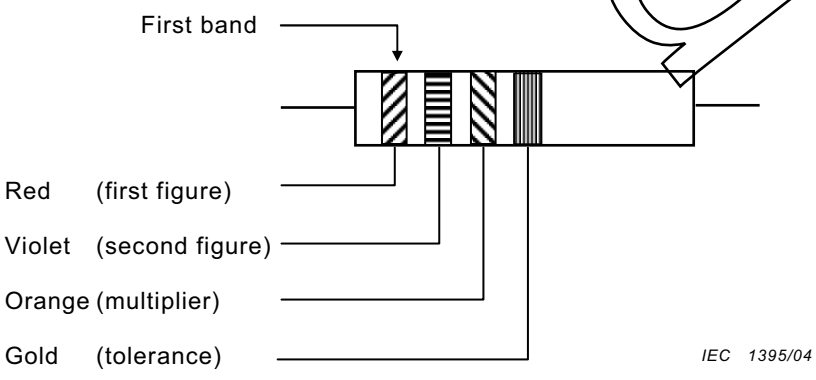
For cylindrical types, the helix shall be superimposed on the full length of the existing bands of colour code indicating the resistance value and tolerance, with the helix covering not less than 270° of the circumference.

For other types, similar methods of colour coding should be used as described in the detail specification.

Colour-code marking of the temperature coefficient shall only be used in combination with three significant figures.

3.4.1 Example of colour-code marking for resistance values with two significant figures

Resistor of 27 000 Ω with a tolerance of ±5 %.



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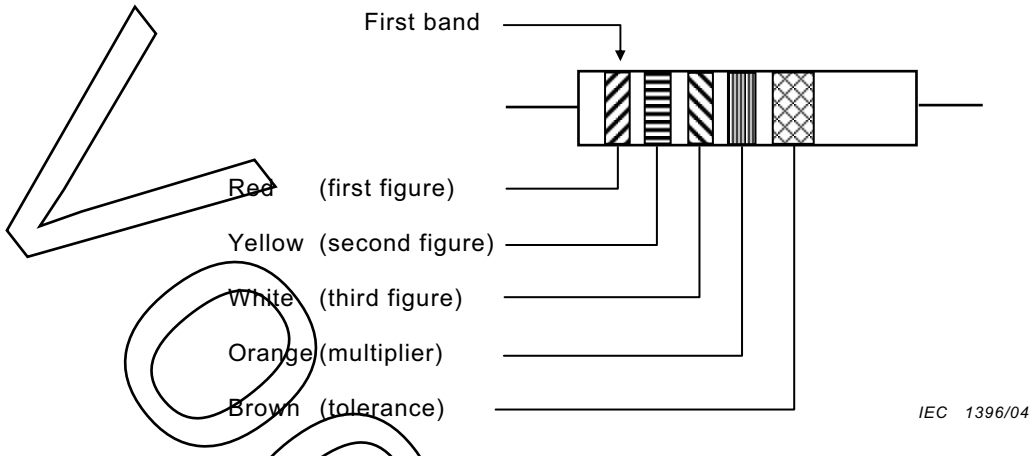
3.4.2 Example of colour-code marking for resistance values with three significant figures

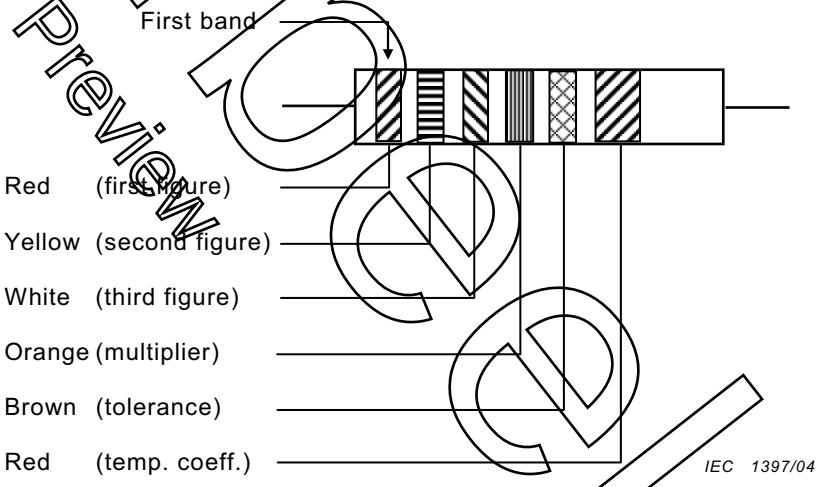
Resistor of 249 000 Ω with a tolerance of ±1 %.



NOTE In order to avoid any confusion, the last band shall be 1,5 to 2 times wider than the other bands.

3.4.3 Example of colour-code marking for resistance values with three significant figures and temperature coefficient

Resistor of 249 000 Ω with a tolerance of ±1 % and a temperature coefficient of ±50 × 10^{-6}/K.



NOTE In order to avoid any confusion, the last band should be 1,5 to 2 times wider than the other bands.

4 Letter and digit code for resistance and capacitance values

4.1 General rules

4.1.1 The code shall use 3, 4 or 5 characters consisting of 2 figures and a letter, 3 figures and a letter, or 4 figures and a letter, as required.

4.1.2 The code letters replace the decimal point as shown in the examples in Tables 2 and 3.

4.1.3 Any additional code letter or digit shall appear after the tolerance letter specified in Clause 5 and shall be so applied as not to confuse the coding for value and tolerance.

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