

Harmonized system of quality
assessment for electric components

Varistors for use in electronic equipment — Sectional specification for surge suppression varistors

National foreword

This British Standard is the UK implementation of IEC 61051-2:1992+A1:2009. It supersedes BS QC 420100:1992, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment 1 is indicated by A1 A1.

The UK participation in its preparation was entrusted to Technical Committee EPL/40X, Capacitors and resistors for electronic equipment.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard, having been prepared under the direction of the Electronic Components Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 15 July 1992

© The British Standards Institution 2012. BSI Standards Limited 2012.

ISBN 978 0 580 62550 3

Amendments/corrigenda issued since publication

Date	Comments
29 February 2012	Implementation of IEC amendment 1:2009

Contents

	Page
Committees responsible	Inside front cover
National foreword	ii
Section 1. General	
1.1 Scope	1
1.2 Object	1
1.3 Related documents	1
1.4 Information to be given in a detail specification	1
Section 2. Preferred ratings, characteristics and test severities	
2.1 Preferred characteristics	2
2.2 Derating curves	3
2.3 Preferred test severities	3
Section 3. Quality assessment procedures	
3.1 Structurally Similar Components	5
3.2 Qualification Approval	5
3.3 Quality Conformance Inspection	10
Annex A (informative) Combination pulse testing	12
Table I — Test schedule for Qualification Approval	6
Table IIA	11
Table IIB	11
Bibliography	Inside back cover

Section 1. General

1.1 Scope

This standard is applicable to surge suppression varistors intended to protect electronic and other sensitive equipment from surges, operating from a d.c. supply, or an a.c. supply having a frequency not greater than 400 Hz.

Varistors which are the subject of this sectional specification are not intended to give primary protection against lightning surges.

1.2 Object

The object of this standard is to prescribe preferred ratings and characteristics and to select from IEC Publication 1051-1, the appropriate quality assessment procedures, tests and measuring methods and to give general performance requirements for this type of varistor.

Test severities and requirements prescribed in detail specifications referring to this sectional specification shall be of equal or higher performance level, because lower performance levels are not permitted.

1.3 Related documents

IEC Publications:

Publication 1051-1 (1990):	<i>Varistors for Use in Electronic Equipment — Part 1: Generic Specification.</i>
Publication 68:	<i>Environmental Testing.</i>
Publication 410 (1973):	<i>Sampling Plans and Procedures for Inspection by Attributes.</i>
Publication QC 001001 (1986):	<i>Basic Rules of the IEC Quality Assessment System for Electronic Components (IECQ).</i>
Publication QC 001002 (1986):	<i>Rules of Procedure of the IEC Quality Assessment System for Electronic Components (IECQ).</i>

- Ⓐ IEC 60664-1:1992, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests* Ⓐ

1.4 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 specification or blank detail specification. When more severe requirements are included, they shall be listed in Sub-clause 1.8 of the detail specification and indicated in the test schedules, for example by an asterisk.

NOTE The information given in the Sub-clauses 1.4.1 and 1.4.3 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.

1.4.1 Outline drawing and dimensions

There shall be an illustration of the varistor as an aid to easy recognition and for comparison of the varistor with others. Dimensions and their associated tolerances, which affect interchangeability and mounting, shall be given in the detail specification. All dimensions shall preferably be stated in millimetres, however, when the original dimensions are given in inches, the converted metric dimensions in millimetres shall be added.

Normally the numerical values shall be given for the length, width and height of the body and the wire spacing or for cylindrical types the body diameter, and the length and diameter of the terminations. When necessary, for example when in a detail specification more than one style is covered, 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 varistor. When the varistor is not designed for use on printed boards, this shall be clearly stated in the detail specification.

1.4.2 Mounting

The detail specification shall specify the method of mounting to be applied for normal use and for the application of the vibration and the bump or shock tests. The varistors shall be mounted by their normal means. The design of the varistor may be such that special mounting fixtures are required in its use. In this case the detail specification shall describe the mounting fixtures and they shall be used in the application of the vibration and bump or shock tests. For the latter tests the mounting shall be such that there shall be no parasitic vibration.

1.4.3 Style (IEC Publication 1051-1, Sub-clause 2.2.3)

For the purpose of this standard the style is a combination of nominal dimensions and characteristics. It may be represented by a double-letter code e.g. AB, BC, CD, etc. which is arbitrarily chosen for each nominal dimension/characteristic combination covered by a detail specification. The style designation, therefore, has no meaning unless the number of the detail specification is also given.

1.4.4 Ratings and characteristics

The ratings and characteristics shall be in accordance with the relevant clauses of this specification.

1.4.5 Marking

The detail specification shall specify the content of the marking on the varistor and on the package. Deviations from Sub-clause 2.4 of the Generic Specification, IEC Publication 1051-1 shall be specifically stated.

1.4.6 Ordering information

The detail specification shall indicate that the following information is required when ordering varistors:

- 1) Style reference.
- 2) Maximum continuous a.c. voltage.
- 3) Number and issue reference of the detail specification.

1.4.7 Additional information (not for inspection purposes)

The detail specification may include information (which is not required to be verified by the inspection procedure), such as circuit diagrams, curves, drawings and notes needed for the clarification of the detail specification.

Section 2. Preferred ratings, characteristics and test severities

2.1 Preferred characteristics

The values given in detail specifications shall preferably be selected from the following:

2.1.1 Preferred climatic categories

The varistors covered by this specification are classified into climatic categories according to the general rules given in IEC Publication 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 and – 10 °C.

Upper category temperature: + 70 °C, + 85 °C, + 100 °C, + 125 °C and + 155 °C.

Duration of the damp heat, steady state test: 4, 10, 21 and 56 days (not applicable to unprotected types which have a –/–/00 category).

The severities for the cold and dry heat tests are the lower and upper category temperatures respectively. Because of the construction of some varistors these temperatures will occur between two of the preferred temperatures given in IEC Publication 68-2. In this event the nearest preferred temperature within the actual temperature range of the varistor shall be chosen for this severity.