

# Harmonized system of quality assessment for electronic components — Fixed capacitors for use in electronic equipment — Sectional specification: Fixed metallized polypropylene film dielectric d.c. capacitors

[IEC title. Fixed capacitors for use in electronic equipment —  
Part 16: Sectional specification: Fixed metallized polypropylene  
film dielectric d.c. capacitors]

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- British Telecommunications
- Electronic Components Industry Federation
- Electronic Engineering Association
- Ministry of Defence
- National Supervising Inspectorate
- Society of British Aerospace Companies Limited
- Telecommunication Engineering and Manufacturing Association (TEMA)

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# National foreword

This British Standard has been prepared under the direction of the Electronic Components Standards Committee. It is identical with IEC Publication 384-16 [QC 301200] *“Fixed capacitors for use in electronic equipment. Part 16: Sectional specification: Fixed metallized polypropylene film dielectric d.c. capacitors”*, published in 1982 by the International Electrotechnical Commission (IEC).

This standard is a harmonized specification within the IECQ system of quality assessment for electronic components.

**Terminology and conventions.** The text of the International Standard has been approved as suitable for publication as a British Standard without deviation. Some terminology and certain conventions are not identical with those used in British Standards; attention is drawn especially to the following.

For the purposes of this British Standard **1.1** and **1.2** should be regarded as constituting the scope of the standard.

**Cross references.** The British Standard which implements QC 001001 and QC 001002 is BS 9000 *“General requirements for a system for electronic components of assessed quality”* Part 3:1991 *“Specification for the national implementation of the IECQ system”*.

| International Standard | Corresponding British Standard                                                                                                                                                                                                    |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISO 3:1973             | BS 2045:1965 <i>Preferred numbers</i><br>(Technically equivalent)                                                                                                                                                                 |
| IEC 62:1974            | BS 1852:1975 <i>Marking codes for resistors and capacitors</i><br>(Identical)                                                                                                                                                     |
| IEC 63:1963            | BS 2488:1966 <i>Schedule of preferred numbers for the resistance of resistors and the capacitance of capacitors for telecommunication equipment</i><br>(Technically equivalent)                                                   |
| IEC 68                 | BS 2011 <i>Basic environmental testing procedures</i>                                                                                                                                                                             |
| IEC 68-1:1982          | Part 1.1:1983 <i>General and guidance</i><br>(Identical)                                                                                                                                                                          |
| IEC 384-1:1982         | BS QC 300000:1983 <i>Fixed capacitors for use in electronic equipment</i>                                                                                                                                                         |
| (QC 300000:1982)       | <i>Generic specification</i><br>(Identical)                                                                                                                                                                                       |
| IEC 384-14:1981        | BS 6201 <i>Fixed capacitors for use in electronic equipment</i><br>Part 3:1982 <i>Specification for fixed capacitors for radio interference suppression. Selection of methods of test and general requirements</i><br>(Identical) |
| IEC 410:1973           | BS 6001 <i>Sampling procedures and inspection by attributes</i><br>Part 1:1991 <i>Specification for sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection</i>                                        |

There is no corresponding British Standard for IEC 65, but as it is referred to for information only, the validity of this British Standard is not affected. A British Standard related to IEC 65 is BS 415:1979 “*Specification for safety requirements for mains-operated electronic and related apparatus for household and similar general use*”.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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

### Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 18, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.



## Section 1. General

### 1.1 Scope

This standard applies to fixed capacitors with metallized electrodes and polypropylene dielectric for use in electronic equipment.

These capacitors may have “self-healing properties” depending on conditions of use. They are mainly intended for use with direct voltage. Capacitors for alternating voltage and pulse applications will be covered by supplements to this document or a separate document.

The maximum power to be applied is 500 var at 50 Hz and the maximum peak voltage is 2 500 V. Two performance grades of capacitors are covered, Grade 1 for long-life application and Grade 2 for general application.

Capacitors for radio interference suppression are not included, but are covered by IEC Publication 384-14: Fixed Capacitors for Use in Electronic Equipment. Part 14: Sectional Specification: Fixed Capacitors for Radio Interference Suppression. Selection of Methods of Test and General Requirements.

Capacitors for electrical shock hazard protection (covered by IEC Publication 65: Safety Requirements for Mains Operated Electronic and Related Apparatus for Household and Similar General Use) and fluorescent lamp and motor capacitors (covered by IEC Technical Committee No. 33: Power Capacitors, and IEC Technical Committee No. 34: Lamps and Related Equipment, specifications) are also excluded.

### 1.2 Object

The object of this standard is to prescribe preferred ratings and characteristics and to select from IEC Publication 384-1:1982, the appropriate quality assessment procedures, tests and measuring methods and to give general performance requirements for this type of capacitor. 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 62:1974:        | <i>Marking Codes for Resistors and Capacitors.</i>                                               |
| Publication 63:1963:        | <i>Preferred Number Series for Resistors and Capacitors.</i>                                     |
|                             | Amendment No. 1 (1967).                                                                          |
|                             | Amendment No. 2 (1977).                                                                          |
| Publication 68:             | <i>Basic Environmental Testing Procedures.</i>                                                   |
| Publication 384-1:1982:     | <i>Fixed Capacitors for Use in Electronic Equipment.</i>                                         |
|                             | <i>Part 1: Generic Specification.</i>                                                            |
| Publication 410:1973:       | <i>Sampling Plans and Procedures for Inspection by Attributes.</i>                               |
| Publication QC 001001:1981: | <i>Basic Rules of the IEC Quality Assessment System for Electronic Components (IECQ).</i>        |
| Publication QC 001002:1981: | <i>Rules of Procedure of the IEC Quality Assessment System for Electronic Components (IECQ).</i> |

#### *ISO publication:*

|                      |                                                         |
|----------------------|---------------------------------------------------------|
| ISO Standard 3:1973: | <i>Preferred Numbers — Series of Preferred Numbers.</i> |
|----------------------|---------------------------------------------------------|

NOTE The above references apply to the current editions except for IEC Publication 68, for which the referenced edition in the applicable test clauses of the generic specification shall be used.

## 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 or blank detail specification. When more severe requirements are included, they shall be listed in Sub-clause 1.9 of the detail specification and indicated in the test schedules, for example by an asterisk.

NOTE The information given in Sub-clause 1.4.1 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.

### 1.4.1 Outline drawing and dimensions

There shall be an illustration of the capacitor as an aid to easy recognition and for comparison of the capacitor 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 of the body, the 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 a number of items (capacitance values/voltage ranges) are 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 capacitor. When the capacitor 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 capacitors shall be mounted by their normal means. The design of the capacitor 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.

### 1.4.3 Ratings and characteristics

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

#### 1.4.3.1 *Rated capacitance range*

See Sub-clause 2.2.1.

NOTE When products approved to the detail specification may have different ranges, the following statement should be added: "The range of values available in each voltage range is given in the qualified products list."

#### 1.4.3.2 *Particular characteristics*

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

#### 1.4.3.3 *Soldering*

The detail specification shall prescribe the test methods, severities and requirements applicable for the solderability and the resistance to soldering heat test.

### 1.4.4 Marking

The detail specification shall specify the content of the marking on the capacitor and on the package. Deviations from Sub-clause 1.6 of this sectional specification shall be specifically stated.