

BRITISH STANDARDS INSTITUTION  
2 PARK STREET, LONDON W1A 2BS

+amd.1

BS CECC 30401 023  
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Specification available from:

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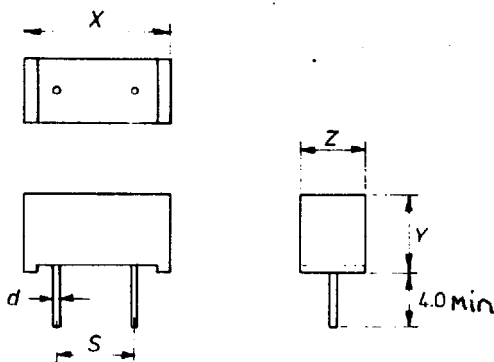
ELECTRONIC COMPONENTS OF ASSESSED QUALITY  
DETAIL SPECIFICATION IN ACCORDANCE WITH

BS E9070: 1975, BS CECC 30400: 1978

MANUFACTURER'S TYPE NUMBER  
See table 1 below  
See PD 9002 and CECC 00200

For ordering information  
see clause 6

Outline and dimensions First angle projection



FIXED METALLIZED POLYETHYLENE  
TEREPHTHALATE FILM DIELECTRIC D.C.  
CAPACITORS

TYPICAL CONSTRUCTION: RECTANGULAR  
INSULATED NON-METALLIC CASE, RIGID  
RADIAL TERMINATIONS INTENDED FOR  
PRINTED CIRCUIT APPLICATIONS

FULL ASSESSMENT

(See table 1 below)  
All dimensions in millimetres  
Marking information. See clause 5.

Refer to Qualified Product List PD 9002 and/or CECC 00200 for details of manufacturers approved to this specification.

Gr 5

[Table 1

TABLE 1. DIMENSIONS

| Case size | X<br>(max.) | Y<br>(max.) | Z<br>(max.) | S<br>+0.35 -0.7 | d    |      |      | Typical<br>mass |
|-----------|-------------|-------------|-------------|-----------------|------|------|------|-----------------|
|           |             |             |             |                 | min. | nom. | max. |                 |
|           | mm          | mm          | mm          | mm              | mm   | mm   | mm   | g               |
| 1         | 13.5        | 10.5        | 5.0         | 10.16           | 0.75 | 0.80 | 0.88 | 0.8             |
| 2         | 13.5        | 11.5        | 6.5         | 10.16           | 0.75 | 0.80 | 0.88 | 1.0             |
| 3         | 19.0        | 12.5        | 7.0         | 15.24           | 0.75 | 0.80 | 0.88 | 2.0             |
| 4         | 19.0        | 15.0        | 9.0         | 15.24           | 0.75 | 0.80 | 0.88 | 3.0             |
| 5         | 27.0        | 20.0        | 10.0        | 22.86           | 0.75 | 0.80 | 0.88 | 4.0             |
| 6         | 27.0        | 20.5        | 10.5        | 22.86           | 0.75 | 0.80 | 0.88 | 6.0             |
| 7         | 32.0        | 23.0        | 13.0        | 27.94           | 0.75 | 0.80 | 0.88 | 13.0            |
| 8         | 32.0        | 22.5        | 13.5        | 27.94           | 0.75 | 0.80 | 0.88 | 13.0            |

NOTE. The capacitor shall be capable of seating firmly on the printed wiring board, and the body moulding shall not seal off the holes through which the capacitor leads pass.

# 1. SPECIFIED METHOD OF MOUNTING FOR VIBRATION AND BUMP

For case sizes up to and including 6 g the capacitors shall be pressed down firmly on to a rigid mounting surface and fixed by soldering the leads. For larger case sizes the capacitor shall be mounted in the same way and the body shall be clamped.

# 2. RATINGS AND CHARACTERISTICS

|  Grade                          | <del>Long life grade</del>                                                                | <del>Table no.</del>                                                                 |
|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  Capacitance range              | See table 2                                                                               |  |
|  Capacitance tolerances:        |                                                                                           |                                                                                      |
| standard                                                                                                         | $\pm 10\%$ (K)                                                                            |                                                                                      |
| special order                                                                                                    | $\pm 20\%$ (M), $\pm 5\%$ (J)                                                             |                                                                                      |
|  Rated voltage                  | See table 2                                                                               |  |
|  Category voltage               | As rated voltage                                                                          |  |
|  Rated temperature              | 85 °C                                                                                     |                                                                                      |
|  Insulation resistance          | See table 3                                                                               |  |
|  Tangent of loss angle at 1 kHz | $C_R > 1 \mu F : \tan \delta \leq 0.01$<br>$C_R \leq 1 \mu F : \tan \delta \leq 0.008$    |                                                                                      |
|  Climatic category              | 40/085/21                                                                                 |                                                                                      |
|  Vibration severity             | BS 2011: Part 2.1Fc,<br>Procedure B4, 0.75 mm or<br>98 m/s <sup>2</sup> (10 Hz to 500 Hz) |                                                                                      |

| <u>Grade</u>                 | <u>Long life grade</u>                              | <u>Table no.</u> |
|------------------------------|-----------------------------------------------------|------------------|
| Duration                     | 6 h                                                 |                  |
| Bump                         | 390 m/s <sup>2</sup> (40g <sub>n</sub> ) 1000 bumps |                  |
| Solderability                |                                                     |                  |
| Solder bath method           | 230 °C with heat                                    |                  |
| Resistance to soldering heat | 260 °C                                              |                  |
| Low air pressure             | 2 kPa (20 mbar*)                                    |                  |

### 3. ADDITIONAL INFORMATION (NOT FOR INSPECTION PURPOSES)

These capacitors have been designed for wide general application in electrical and electronic circuits and are suitable for domestic, commercial and high grade professional use.

These capacitors are not suitable for connection across supply mains.

|                              |                         |
|------------------------------|-------------------------|
| Typical capacitance change   | -40 °C to +20 °C: 5.0 % |
| as a function of temperature | +20 °C to +85 °C: 3.0 % |

\* 1 mbar = 10<sup>2</sup> N/m<sup>2</sup> = 100 Pa.

TABLE 2. VALUES OF CAPACITANCE AND VOLTAGE RELATED TO CASE SIZE

| Capacitance<br>$\mu\text{F}$ | Rated voltage $U_R$ |            |            |            |            |
|------------------------------|---------------------|------------|------------|------------|------------|
|                              | 63 V d.c.           | 100 V d.c. | 250 V d.c. | 400 V d.c. | 630 V d.c. |
| 0.01                         |                     |            |            | 1          | 1          |
| 0.015                        |                     |            |            | 1          | 2          |
| 0.022                        |                     |            | 1          | 1          | 2          |
| 0.033                        |                     |            | 1          | 2          | 3          |
| 0.047                        |                     | 1          | 1          | 3          | 4          |
| 0.068                        |                     | 1          | 2          | 3          | 4          |
| 0.1                          | 1                   | 1          | 2          | 4          | 5          |
| 0.15                         | 1                   | 2          | 3          | 4          | 5          |
| 0.22                         | 1                   | 2          | 3          | 5          | 5          |
| 0.33                         | 2                   | 3          | 4          | 5          | 7          |
| 0.47                         | 2                   | 3          | 5          | 5          | 8          |
| 0.68                         | 3                   | 4          | 5          | 7          | 8          |
| 1.0                          | 3                   | 4          | 5          | 8          |            |
| 1.5                          | 4                   | 5          | 7          | 8          |            |
| 2.2                          | 4                   | 5          | 7          |            |            |
| 3.3                          | 5                   | 6          | 8          |            |            |
| 4.7                          | 5                   | 7          |            |            |            |
| 6.8                          | 6                   | 8          |            |            |            |
| 10.0                         | 7                   |            |            |            |            |

TABLE 3. INSULATION RESISTANCE

| Minimum $R_C$ product<br>$R$ = Insulation resistance<br>between the terminations<br>$C$ = Rated capacitance<br><br>s |                      | Minimum insulation<br>resistance between<br>the terminations<br><br>$M\Omega$ |                      | Minimum insulation<br>resistance between<br>the terminations<br>and case<br><br>$M\Omega$ |
|----------------------------------------------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------|
| Rated capacitance $> 0.33 \mu\text{F}$                                                                               |                      | $\leq 0.33 \mu\text{F}$                                                       |                      |                                                                                           |
| Rated voltage $> 100 \text{ V}$                                                                                      | $\leq 100 \text{ V}$ | $> 100 \text{ V}$                                                             | $\leq 100 \text{ V}$ |                                                                                           |
| 10 000                                                                                                               | 5 000                | 30 000                                                                        | 15 000               | 30 000                                                                                    |

NOTE. The capacitance values are within the E6 series (BS 2488).

#### 4. RELATED DOCUMENTS

|               |                                                                                                                                                                         |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BS 2011       | Basic environmental testing procedures (IEC 68)                                                                                                                         |
| BS 2488       | Schedule of preferred numbers for the resistance of resistors and the capacitance of capacitors for telecommunication equipment (IEC 63)                                |
| BS 6001       | Sampling procedures and tables for inspection by attributes                                                                                                             |
| BS E9000      | General requirements for electronic components of assessed quality harmonized with the CENELEC Electronic Components Committee System                                   |
| BS E9070      | Harmonized system of quality assessment for electronic components: Generic specification: Fixed capacitors                                                              |
| BS CECC 30400 | Harmonized system of quality assessment for electronic components: Sectional specification: Fixed metallized polyethylene-terephthalate film dielectric d.c. capacitors |
| PD 9002       | BS 9000 component selection guide                                                                                                                                       |
| CECC 00200    | Qualified products list                                                                                                                                                 |

#### 5. MARKING

The following information shall be given on the capacitor in accordance with 1.4 of BS CECC 30400:

- (a) rated capacitance;
- (b) rated voltage;
- (c) tolerance on rated capacitance;
- (d) manufacturer's code.

#### 6. ORDERING INFORMATION

Orders for components complying with the requirements of this specification shall include the following minimum information:

- (a) quantity;
- (b) BS CECC specification number, issue number and date, i.e. BS CECC 30401 023 Issue 1;
- (c) capacitance value and tolerance;
- (d) rated voltage.