

BRITISH STANDARDS INSTITUTION  
2, PARK STREET, LONDON, W1A 2BS



Specification available from:-  
As shown in PD 9002, CECC 00 200 and  
STANDARD TELEPHONES AND CABLES plc  
STC COMPONENTS (CAPACITORS)  
BRIXHAM ROAD, PAIGNTON, DEVON TQ4 7BE

BS CECC 30 201-032  
ISSUE 1  
DATE March 1985  
Number of pages 21

ELECTRONIC COMPONENTS OF ASSESSED QUALITY  
DETAIL SPECIFICATION IN ACCORDANCE WITH  
BS CECC 30 000 1975  
BS CECC 30 200 1975

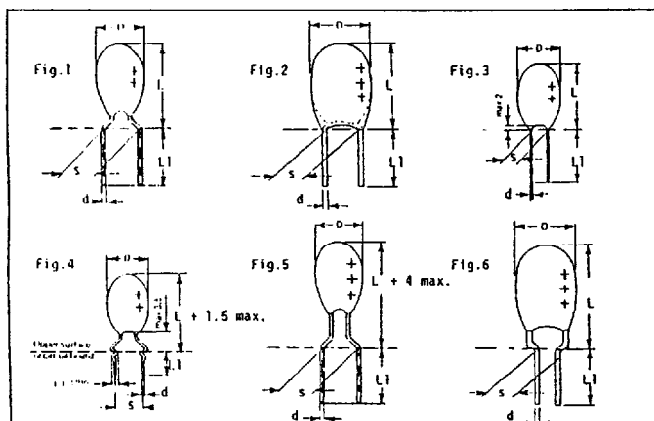
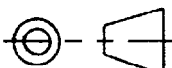
MANUFACTURER'S TYPE NUMBER

TAP

SEE PD 9002 AND CECC 00 200

Outline and dimensions

Third angle  
projection



For ordering information see  
Clause 6.0

TANTALUM ELECTROLYTIC  
POLAR  
SOLID ELECTROLYTE  
RESIN DIPPED  
RADIAL TERMINATIONS

See TABLE 1 and page 2 for detailed dimensions  
Marking information: See Clause 5.0

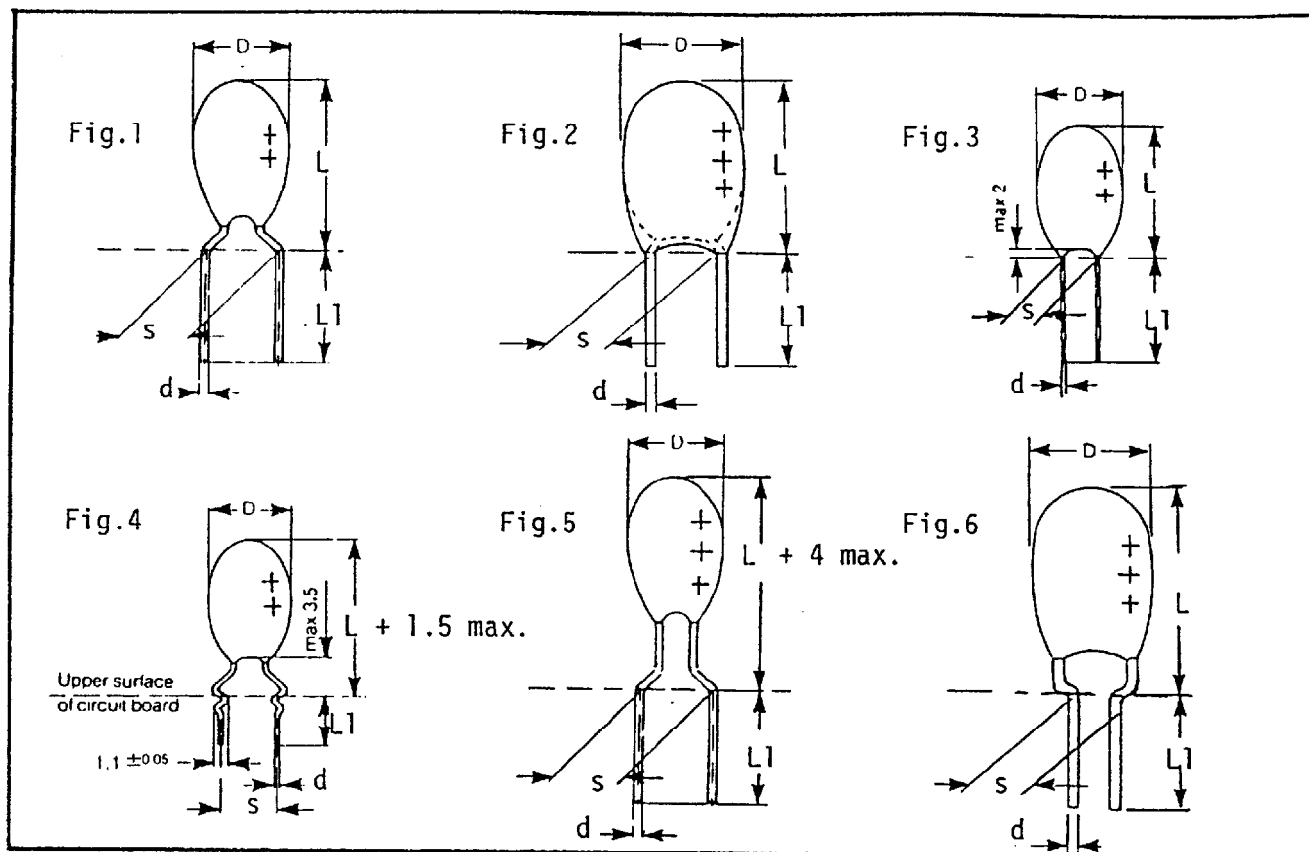
Complies with the minimum  
requirements of TABLES 2 & 3  
of CECC 30 200 Issue 1

TABLE 1 DIMENSIONS RELATED TO CASE SIZE (Dimensions are in mm.)

| CASE SIZE<br>REFERENCE | L    | D max. | Typical<br>weight g | CASE SIZE<br>REFERENCE | L    | D max. | Typical<br>weight g |
|------------------------|------|--------|---------------------|------------------------|------|--------|---------------------|
| 2                      | 9.0  | 4.5    | 0.2                 | 9                      | 13.0 | 8.0    | 0.5                 |
| 3                      | 9.5  | 5.0    | 0.2                 | 10                     | 14.0 | 8.5    | 0.6                 |
| 4                      | 10.0 | 5.0    | 0.2                 | 11                     | 14.0 | 9.0    | 0.8                 |
| 5                      | 11.0 | 5.5    | 0.3                 | 12                     | 14.5 | 9.0    | 1.0                 |
| 6                      | 11.5 | 6.0    | 0.3                 | 13                     | 16.0 | 9.0    | 1.5                 |
| 7                      | 12.0 | 6.0    | 0.4                 | 14                     | 17.0 | 10.0   | 2.0                 |
| 8                      | 12.0 | 7.0    | 0.5                 | 15                     | 18.5 | 10.0   | 3.0                 |
|                        |      |        |                     | 16                     | 19.0 | 10.0   | 4.5                 |

NOTES A The wire terminations of capacitors with leads less than 6mm long  
are classed as rigid

Refer to Qualified Products List PD 9002 and/or CECC 00 200 for details of  
Manufacturers approved to this specification



# DETAILED DIMENSIONS ( All dimensions in mm )

| Suffix | Figure Number                  | L1            | s                        | d              |
|--------|--------------------------------|---------------|--------------------------|----------------|
| B      | Fig. 5                         | $16 \pm 4$    | $5.0 \pm 1.0$            | $0.5 \pm 0.05$ |
| C      | Shouldered Leads<br>Fig. 1     | $16 \pm 4$    | $5.0 \pm 1.0$            | $0.5 \pm 0.05$ |
|        | Non Shouldered Leads<br>Fig. 2 |               |                          |                |
| F      | Fig. 4                         | $4.5 \pm 1.5$ | $5.0 \pm 1.0$<br>$- 0.5$ | $0.45 \pm 0.1$ |
| G      | Fig. 6                         | $16 \pm 4$    | $3.18 \pm 0.5$           | $0.5 \pm 0.05$ |
| H      | Fig. 1                         | $16 \pm 4$    | $6.35 \pm 1.0$           | $0.5 \pm 0.05$ |
| SP     | Fig. 3                         | $16 \pm 4$    | $2.5 \pm 0.5$            | $0.45 \pm 0.1$ |

NOTE: Lead lengths may be supplied to tolerances other than those above and should be specified in the ordering information.

## 2.0 SPECIFIED METHOD OF MOUNTING FOR VIBRATION AND SHOCK TESTING

The capacitors shall be mounted by clamping the body and the terminations.

## 3.0 RATING AND CHARACTERISTICS

|                                             |                                     |
|---------------------------------------------|-------------------------------------|
| Capacitance range ( E6 series as standard ) | See TABLE 2A                        |
| Capacitance tolerance                       | $\pm 10\%$ , $\pm 20\%$ as standard |
| Rated Voltage                               | See TABLE 2A                        |
| Rated Temperature                           | 85°C                                |
| Leakage Current                             | See TABLE 2B                        |
| Tangent of Loss Angle                       | See TABLE 2B                        |
| Impedance at 100kHz                         | See TABLE 2C                        |
| Climatic Category                           | -55/085/21                          |
| Surge Voltage                               | See TABLE 3A                        |
| Typical ripple ratings                      | See TABLE 3B                        |

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TABLE 2A CAPACITANCE AND VOLTAGE RELATED TO CASE SIZE

| U <sub>R</sub><br>CAPACITANCE uF | 6.3            | 10             | 16             | 20            | 25            | 35           | 50            |
|----------------------------------|----------------|----------------|----------------|---------------|---------------|--------------|---------------|
|                                  | CASE SIZE      |                |                |               |               |              |               |
| 0.1<br>0.15<br>0.22              |                |                |                |               |               | 2<br>2<br>2  | 2<br>2<br>2   |
| 0.33<br>0.47<br>0.68             |                |                |                |               |               | 2<br>2<br>2  | 2<br>2<br>2   |
| 1.0<br>1.5<br>2.2                |                |                | 2              | 2<br>2        | 2<br>2<br>2   | 2<br>2<br>3  | 4<br>5<br>5   |
| 3.3<br>4.7<br>6.8                | 2<br>2         | 2<br>2<br>3    | 2<br>3<br>4    | 3<br>4<br>5   | 3<br>4<br>5   | 4<br>5<br>6  | 7<br>8<br>8   |
| 10<br>15<br>22                   | 3<br>4<br>5    | 4<br>5<br>6    | 5<br>6<br>7    | 6<br>7<br>8   | 6<br>7<br>8   | 7<br>8<br>10 | 9<br>10<br>11 |
| 33<br>47<br>68                   | 6<br>7<br>8    | 7<br>8<br>9    | 7<br>9<br>11   | 9<br>10<br>13 | 9<br>12<br>13 | 12<br>13     |               |
| 100<br>150<br>220                | 9<br>11<br>12  | 11<br>13<br>14 | 13<br>13<br>15 | 13            |               |              |               |
| 330<br>470<br>680                | 14<br>15<br>16 | 15             |                |               |               |              |               |

TABLE 2B      CHARACTERISTICS AT HIGH AND LOW TEMPERATURES

| Test Temperature                                               | Capacitance Change | Tangent of Loss Angle | Leakage Current             | Impedance   |
|----------------------------------------------------------------|--------------------|-----------------------|-----------------------------|-------------|
| Room Temperature<br>$20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ | Reference Value    | As TABLE 2B1          | As TABLE 2B2                | As TABLE 2C |
| $-55^{\circ}\text{C} \pm 2^{\circ}\text{C}$                    | $\leq 10\%$ max    | As TABLE 2B1          | N/A                         | As TABLE 2C |
| $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$                     | $\leq 15\%$ max    | As TABLE 2B1          | 10 x the value of TABLE 2B2 | N/A         |

TABLE 2B1      MAXIMUM VALUES OF TANGENT OF LOSS ANGLE

| Capacitance Value $\mu\text{F}$ | Tangent of Loss Angle |
|---------------------------------|-----------------------|
| $\leq 1.5$                      | 0.04                  |
| $> 2.2$ and $\leq 6.8$          | 0.06                  |
| $> 10$ and $\leq 68$            | 0.08                  |
| $> 100$ and $\leq 330$          | 0.10                  |
| $> 470$                         | 0.12                  |

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TABLE 2B2 MAXIMUM VALUE OF LEAKAGE CURRENT  $\mu A$

| $U_R$<br>CAPACITANCE $\mu F$ | 6.3               | 10                | 16                | 20                 | 25                | 35                | 50                |
|------------------------------|-------------------|-------------------|-------------------|--------------------|-------------------|-------------------|-------------------|
| 0.1<br>0.15<br>0.22          |                   |                   |                   |                    |                   | 0.5<br>0.5<br>0.5 | 0.5<br>0.5<br>0.5 |
| 0.33<br>0.47<br>0.68         |                   |                   |                   |                    |                   | 0.5<br>0.5<br>0.5 | 0.5<br>0.5<br>0.5 |
| 1.0<br>1.5<br>2.2            |                   |                   | 0.5               | 0.5<br>0.5         | 0.5<br>0.5<br>0.5 | 0.5<br>0.5<br>1.0 | 0.5<br>1.0<br>1.0 |
| 3.3<br>4.7<br>6.8            | 0.5<br>0.5        | 0.5<br>0.5<br>1.0 | 0.5<br>1.0<br>1.0 | 0.5<br>1.0<br>1.5  | 1.0<br>1.0<br>1.5 | 1.0<br>1.5<br>2.5 | 1.5<br>2.5<br>3.5 |
| 10<br>15<br>22               | 1.0<br>1.0<br>1.5 | 1.0<br>1.5<br>2.5 | 1.5<br>2.5<br>3.5 | 2.0<br>3.0<br>4.5  | 2.5<br>4.0<br>5.5 | 3.5<br>5.0<br>7.5 | 5.0<br>7.5<br>10  |
| 33<br>47<br>68               | 2.0<br>3.0<br>4.5 | 3.5<br>4.5<br>7.0 | 5.0<br>7.5<br>10  | 6.5<br>9.5<br>13.5 | 8.5<br>10<br>15   | 10<br>10          |                   |
| 100<br>150<br>220            | 6.5<br>9.5<br>14  | 10<br>15<br>20    | 15<br>20<br>20    | 20                 |                   |                   |                   |
| 330<br>470<br>680            | 20<br>20<br>25    | 20                |                   |                    |                   |                   |                   |

TABLE 2C MAXIMUM VALUE OF IMPEDANCE ( IN OHMS AT 100kHz ) (  $\geq 0.68 \mu\text{F}$  ONLY )

| $U_R$<br>CAPACITANCE $\mu\text{F}$ | 6.3               | 10                 | 16                | 20                | 25                 | 35                 | 50                 |
|------------------------------------|-------------------|--------------------|-------------------|-------------------|--------------------|--------------------|--------------------|
| 0.1<br>0.15<br>0.22                |                   |                    |                   |                   |                    | N/A<br>N/A<br>N/A  | N/A<br>N/A<br>N/A  |
| 0.33<br>0.47<br>0.68               |                   |                    |                   |                   |                    | N/A<br>N/A<br>10.0 | N/A<br>N/A<br>10.0 |
| 1.0<br>1.5<br>2.2                  |                   |                    | 8.0               | 9.0<br>7.0        | 10.0<br>8.0<br>6.0 | 8.0<br>6.0<br>5.0  | 8.0<br>6.0<br>3.5  |
| 3.3<br>4.7<br>6.8                  | 10.0<br>8.0       | 10.0<br>8.0<br>6.0 | 6.0<br>5.0<br>4.0 | 5.5<br>4.5<br>3.6 | 5.0<br>4.0<br>3.1  | 4.0<br>3.0<br>2.5  | 3.0<br>2.5<br>2.0  |
| 10<br>15<br>22                     | 6.0<br>5.0<br>3.7 | 5.0<br>3.7<br>2.7  | 3.2<br>2.5<br>2.0 | 2.9<br>2.3<br>1.8 | 2.5<br>2.0<br>1.5  | 2.0<br>1.6<br>1.3  | 1.6<br>1.2<br>1.0  |
| 33<br>47<br>68                     | 3.0<br>2.0<br>1.8 | 2.1<br>1.7<br>1.3  | 1.6<br>1.3<br>1.0 | 1.4<br>1.2<br>0.9 | 1.2<br>1.0<br>0.8  | 1.0<br>0.8         |                    |
| 100<br>150<br>220                  | 1.6<br>0.9<br>0.9 | 1.0<br>0.8<br>0.6  | 0.8<br>0.6<br>0.5 | 0.6               |                    |                    |                    |
| 330<br>470<br>680                  | 0.7<br>0.7<br>0.6 | 0.5                |                   |                   |                    |                    |                    |