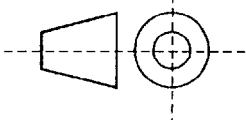
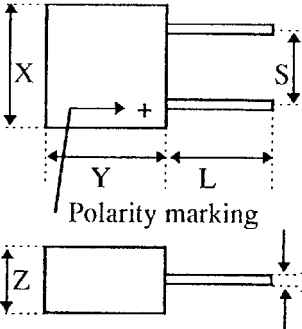
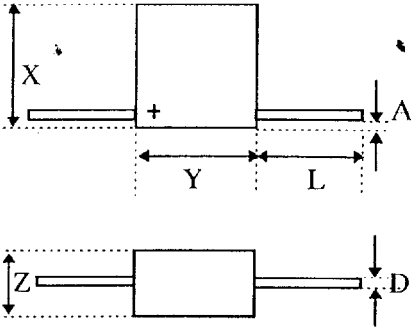


|                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>BRITISH STANDARDS INSTITUTION<br/>389 CHISWICK HIGH ROAD, LONDON W4 4AL</p>                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                             |
| <p>Specification available from:<br/>as shown in CECC 00 200 and<br/>AVX Limited, Long Road, Paignton, Devon TQ4 7ER.</p>                                                                                                                                                                                                                                                                                                                       | <p>CECC 30201-048<br/>Issue 2<br/>Date August 1996<br/>Page 1 of 15</p>                                                                                                                                                                                                                                                                                                        |
| <p>ELECTRONIC COMPONENTS OF ASSESSED QUALITY<br/>DETAIL SPECIFICATION IN ACCORDANCE WITH:<br/>EN 130 000 : 1993<br/>EN 130 200 : 1993</p>                                                                                                                                                                                                                                                                                                       | <p>MANUFACTURER'S TYPE<br/>NUMBERS</p> <p>TAH<br/>Sec CECC 00 200</p> <p>For ordering information see Clause 1.6</p>                                                                                                                                                                                                                                                           |
| <p>Outline and dimensions</p> <p>First angle projection</p>  <p>RADIAL OUTLINE</p>  <p>AXIAL OUTLINE</p>  <p>Polarity marking</p> <p>All dimensions are in millimeters (See Table 1)</p> | <p>DETAIL SPECIFICATION FOR<br/>FIXED TANTALUM<br/>ELECTROLYTIC<br/>CAPACITORS WITH SOLID<br/>ELECTROLYTE, POROUS ANODE<br/>(SUB FAMILY 3)</p> <p>TYPICAL CONSTRUCTION</p> <p>TANTALUM ELECTROLYTIC<br/>SOLID ELECTROLYTE POLAR<br/>POROUS ANODE<br/>RECTANGULAR NON-METALLIC<br/>CASE<br/>RADIAL WIRE TERMINATIONS<br/>AXIAL WIRE TERMINATIONS</p> <p>ASSESSMENT LEVEL: E</p> |

#### QUICK REFERENCE DATA:

|                       |                                     |
|-----------------------|-------------------------------------|
| Capacitance range     | 0,1 $\mu$ F to 150 $\mu$ F          |
| Capacitance tolerance | $\pm 5\%$ , $\pm 10\%$ , $\pm 20\%$ |
| Voltage range         | 6,3 V to 35 V d.c.                  |
| Climatic category     | 55/125/21                           |
| Performance grade     | General purpose                     |

This specification is technically equivalent to and is intended to replace the obsolete BS 9073 F006 and F007. It has been prepared in conformance with EN 130 201 and the test requirements of the European harmonised specification for axial cylindrical metal cased tantalum capacitors.

1 General data1.1 Methods of mounting for vibration and bump or shock tests

For normal use the capacitors shall be mounted by the terminations. In extreme conditions of shock and vibration clamping of the body is recommended.

For shock and vibration testing the capacitors shall be fastened to a rigid test fixture by the body and the terminations.

1.2 Dimensions

Table 1

| Pattern<br>Reference | Y<br>max. | X<br>max. | Z<br>max. | D    |               | Radial<br>S |        | L<br>min. | Axial     |           | Typical<br>mass (g) |
|----------------------|-----------|-----------|-----------|------|---------------|-------------|--------|-----------|-----------|-----------|---------------------|
|                      |           |           |           |      |               |             |        |           | A<br>max. | L<br>min. |                     |
| G                    | 4,2       | 3,2       | 1,9       | 0,25 | +0,03 / -0,05 | 2,5         | ± 0,5  | 4         | 1,0       | 25        | 0,09                |
| H                    | 5,8       | 4,8       | 2,0       | 0,25 | +0,03 / -0,05 | 3,8         | ± 0,5  | 4         | 1,0       | 25        | 0,18                |
| J                    | 7,4       | 5,7       | 2,9       | 0,40 | +0,04 / -0,05 | 4,6         | ± 0,65 | 4         | 1,5       | 25        | 0,40                |
| K                    | 7,9       | 5,9       | 3,4       | 0,40 | +0,04 / -0,05 | 5,0         | ± 0,65 | 4         | 1,5       | 25        | 0,57                |
| L                    | 12,1      | 9,6       | 3,9       | 0,40 | +0,04 / -0,05 | 7,6         | ± 0,65 | 4         | 2,0       | 25        | 1,32                |

1.3 Ratings and characteristics

|                                     |                                          |
|-------------------------------------|------------------------------------------|
| Capacitance range (E6 series)       | See Table 2A                             |
| Tolerance on rated capacitance      | ±5%, ±10%, ±20%                          |
| Rated voltage                       | See Table 2A                             |
| Category voltage                    | See Table 2A                             |
| Surge voltage                       | 1,3 U <sub>R</sub> or 1,3 U <sub>C</sub> |
| Climatic category                   | 55/125/21                                |
| Rated temperature                   | 85°C                                     |
| Capacitance change with temperature | See Table 2B                             |
| Tangent of loss angle (tan δ)       | See Table 2B                             |
| Leakage current in µA               | See Table 2B                             |
| Impedance                           | See Table 2C                             |

Table 2A

Capacitance and voltage related to case size

| $U_R$ (V)         | 6,3                         | 10  | 16 | 20 | 25 | 35 |
|-------------------|-----------------------------|-----|----|----|----|----|
| $U_C$ (V)         | 4                           | 6,3 | 10 | 13 | 16 | 23 |
| $C_R$ ( $\mu F$ ) | Case size (See Notes 1 & 2) |     |    |    |    |    |
| 0,10              | ←                           |     |    |    |    | G  |
| 0,15              | ←                           |     |    |    |    | G  |
| 0,22              | ←                           |     |    |    |    | G  |
| 0,33              | ←                           |     |    |    |    | G  |
| 0,47              | ←                           |     |    |    |    | G  |
| 0,68              | ←                           |     |    |    | G  | H  |
| 1,0               | ←                           |     |    | G  | ←  | H  |
| 1,5               | ←                           |     | G  | ←  |    | H  |
| 2,2               | ←                           | G   | ←  |    | H  | J  |
| 3,3               | G                           | ←   |    | H  | ←  | J  |
| 4,7               | ←                           |     | H  | ←  |    | J  |
| 6,8               | ←                           | H   | ←  |    | J  | K  |
| 10                | H                           | ←   |    | J  | K  | L  |
| 15                | ←                           |     | J  | K  | ←  | L  |
| 22                | ←                           | J   | K  | ←  |    | L  |
| 33                | J                           | K   | ←  |    | L  |    |
| 47                | K                           | ←   |    | L  |    |    |
| 68                | ←                           |     | L  |    |    |    |
| 100               | ←                           | L   |    |    |    |    |
| 150               | L                           |     |    |    |    |    |

Note 1: Letters indicate pattern reference (case size), see Table 1.

Note 2: The capacitors may be used for any lower voltage rating. Where necessary this is indicated by arrows.

Table 2B

Characteristics at high and low temperatures

| U <sub>R</sub><br>(V) | C <sub>R</sub><br>(μF) | Capacitance change (%) |        |        | Maximum values        |      |      |       |                      |      |          |
|-----------------------|------------------------|------------------------|--------|--------|-----------------------|------|------|-------|----------------------|------|----------|
|                       |                        |                        |        |        | Tangent of loss angle |      |      |       | Leakage current (μA) |      |          |
|                       |                        | -55°C                  | 85°C   | 125°C  | -55°C                 | 20°C | 85°C | 125°C | 20°C                 | 85°C | 125°C(1) |
| 6,3                   | 3,3                    | ( ≤ 0                  | ( ≥ 0  | ( ≥ 0  | 0,10                  | 0,06 | 0,08 | 0,10  | 0,5                  | 5    | 6,25     |
|                       | 10                     | ( ≥ -12                | ( ≤ 12 | ( ≤ 15 |                       |      |      |       | 1,0                  | 10   | 12,5     |
|                       | 33                     |                        |        |        |                       |      |      |       | 3,0                  | 30   | 37,5     |
|                       | 47                     |                        |        |        |                       |      |      |       | 3,0                  | 30   | 37,5     |
|                       | 150                    |                        |        |        | 0,13                  | 0,10 | 0,12 | 0,13  | 9,0                  | 90   | 112,5    |
| 10                    | 2,2                    |                        |        |        | 0,10                  | 0,06 | 0,08 | 0,10  | 0,5                  | 5    | 6,25     |
|                       | 6,8                    |                        |        |        |                       |      |      |       | 1,0                  | 10   | 12,5     |
|                       | 22                     |                        |        |        |                       |      |      |       | 3,0                  | 30   | 37,5     |
|                       | 33                     |                        |        |        |                       |      |      |       | 3,0                  | 30   | 37,5     |
|                       | 100                    |                        |        |        | 0,11                  | 0,08 | 0,10 | 0,11  | 9,0                  | 90   | 112,5    |
| 16                    | 1,5                    |                        |        |        | 0,10                  | 0,06 | 0,08 | 0,10  | 0,5                  | 5    | 6,25     |
|                       | 4,7                    |                        |        |        |                       |      |      |       | 1,0                  | 10   | 12,5     |
|                       | 15                     |                        |        |        |                       |      |      |       | 3,0                  | 30   | 37,5     |
|                       | 22                     |                        |        |        |                       |      |      |       | 3,0                  | 30   | 37,5     |
|                       | 68                     |                        |        |        | 0,11                  | 0,08 | 0,10 | 0,11  | 9,0                  | 90   | 112,5    |
| 20                    | 1,0                    |                        |        |        | 0,10                  | 0,06 | 0,08 | 0,10  | 0,5                  | 5    | 6,25     |
|                       | 3,3                    |                        |        |        |                       |      |      |       | 1,0                  | 10   | 12,5     |
|                       | 10                     |                        |        |        |                       |      |      |       | 3,0                  | 30   | 37,5     |
|                       | 15                     |                        |        |        |                       |      |      |       | 3,0                  | 30   | 37,5     |
|                       | 47                     |                        |        |        |                       |      |      |       | 9,0                  | 90   | 112,5    |
| 25                    | 0,68                   |                        |        |        |                       |      |      |       | 0,5                  | 5    | 6,25     |
|                       | 2,2                    |                        |        |        |                       |      |      |       | 1,0                  | 10   | 12,5     |
|                       | 6,8                    |                        |        |        |                       |      |      |       | 3,0                  | 30   | 37,5     |
|                       | 10                     |                        |        |        |                       |      |      |       | 3,0                  | 30   | 37,5     |
|                       | 33                     |                        |        |        |                       |      |      |       | 9,0                  | 90   | 112,5    |
| 35                    | 0,10                   |                        |        |        |                       |      |      |       | 0,5                  | 5    | 6,25     |
|                       | 0,15                   |                        |        |        |                       |      |      |       | 0,5                  | 5    | 6,25     |
|                       | 0,22                   |                        |        |        |                       |      |      |       | 0,5                  | 5    | 6,25     |
|                       | 0,33                   |                        |        |        |                       |      |      |       | 0,5                  | 5    | 6,25     |
|                       | 0,47                   |                        |        |        |                       |      |      |       | 0,5                  | 5    | 6,25     |
|                       | 0,68                   |                        |        |        |                       |      |      |       | 1,0                  | 10   | 12,5     |
|                       | 1,0                    |                        |        |        |                       |      |      |       | 1,0                  | 10   | 12,5     |
|                       | 1,5                    |                        |        |        |                       |      |      |       | 1,0                  | 10   | 12,5     |
|                       | 2,2                    |                        |        |        |                       |      |      |       | 3,0                  | 30   | 37,5     |
|                       | 3,3                    |                        |        |        |                       |      |      |       | 3,0                  | 30   | 37,5     |
|                       | 4,7                    |                        |        |        |                       |      |      |       | 3,0                  | 30   | 37,5     |
|                       | 6,8                    |                        |        |        |                       |      |      |       | 3,0                  | 30   | 37,5     |
|                       | 10                     |                        |        |        |                       |      |      |       | 9,0                  | 90   | 112,5    |
|                       | 15                     |                        |        |        |                       |      |      |       | 9,0                  | 90   | 112,5    |
|                       | 22                     |                        |        |        |                       |      |      |       | 9,0                  | 90   | 112,5    |

(1) Leakage current at 125°C is measured with category voltage.

Table 2C

Maximum values of impedance in ohms at 100 kHz and 20°C ( $\geq 0,68\mu\text{F}$  only).

| $U_R$ (V)               | 6,3 | 10  | 16 | 20 | 25 | 35 |
|-------------------------|-----|-----|----|----|----|----|
| $U_C$ (V)               | 4   | 6,3 | 10 | 13 | 16 | 23 |
| $C_R$ ( $\mu\text{F}$ ) |     |     |    |    |    |    |
| 0,10                    |     |     |    |    |    | NA |
| 0,15                    |     |     |    |    |    | NA |
| 0,22                    |     |     |    |    |    | NA |
| 0,33                    |     |     |    |    |    | NA |
| 0,47                    |     |     |    |    |    | NA |
| 0,68                    |     |     |    |    | 15 | 10 |
| 1,0                     |     |     |    | 15 |    | 10 |
| 1,5                     |     |     | 15 |    |    | 10 |
| 2,2                     |     | 15  |    |    | 10 | 5  |
| 3,3                     | 15  |     |    | 10 |    | 5  |
| 4,7                     |     |     | 10 |    |    | 5  |
| 6,8                     |     | 10  |    |    | 5  | 5  |
| 10                      | 10  |     |    | 5  | 5  | 2  |
| 15                      |     |     | 5  | 5  |    | 2  |
| 22                      |     | 5   | 5  |    |    | 2  |
| 33                      | 5   | 5   |    |    | 2  |    |
| 47                      | 5   |     |    | 2  |    |    |
| 68                      |     |     | 2  |    |    |    |
| 100                     |     | 2   |    |    |    |    |
| 150                     | 2   |     |    |    |    |    |

NA : Not applicable