

Standard Telephones and Cables Limited
BRIMAR VALVE WORKS, FOOTSCRAY, SIDCUP, KENT, ENGLAND

BRIMAR

E. I. A.
REGISTRATION DATA

TYPE 7489

DATE 19.1.61.
ISSUEDTYPE 7489 - LOW-MU DOUBLE TRIODE

The 7489 is a nine pin all glass construction double triode with independent sections for use in A.F. and control applications.

The use of a special rugged electrode construction manufactured by means of semi-automatic assembly techniques contributes to a low catastrophic failure rate.

The cathode sleeve is made of a special alloy to inhibit the growth of cathode interface resistance during long periods of operation under cut-off conditions and the pure tungsten heater has been designed to withstand frequent heater switching (see note). In addition, the heater-cathode construction and materials ensure very low levels of leakage throughout life.

The glass base and envelope strain patterns are tightly controlled during manufacture to prevent glass failures during life. Special attention is also given to the control of materials and processes to minimise the very low change in inter-electrode capacitances during life.

Note: A sample from each production lot is tested under the following elevated conditions to assess heater quality:- heater voltage 120% of nominal value: heater cathode voltage 240V r.m.s.: applied voltages cycled 1 minute on, 3 minutes off for 100 hours.

MECHANICAL DATA

Coated unipotential cathode.

| | | | |
|------------------------------|------|--------------------|-------------------|
| Outline drawing | 6-2 | Bulb | T-6 $\frac{1}{2}$ |
| Base | E9-1 | Small button | 9 pin |
| Maximum diameter | | | $\frac{7}{8}$ " |
| Maximum overall length | | | 2.3/16" |
| Maximum seated height | | | 1.15/16" |
| Pin connections | | Basing | 9A |

| | |
|-----------------------------|-----------------------------|
| Pin 1 - Anode (Section 2) | Pin 6 - Anode (Section 1) |
| Pin 2 - Grid (Section 2) | Pin 7 - Grid (Section 1) |
| Pin 3 - Cathode (Section 2) | Pin 8 - Cathode (Section 1) |
| Pin 4 - Heater | Pin 9 - Heater centre tap |
| Pin 5 - Heater | |

| | |
|--|------|
| Mounting position | any |
| Maximum shock (intermittent service) | 500g |

ELECTRICAL DATAInterelectrode capacitances. (Measured without external shield)

| | |
|--------------------|---------|
| $C_{a'g'}$ | 1.5 pF |
| C in' | 1.6 pF |
| C out' | 0.5 pF |
| $C_{a''g''}$ | 1.5 pF |
| C in'' | 1.6 pF |
| C out'' | 0.45 pF |

Heater:

| | (ac or dc) | <u>Series</u> | <u>Parallel</u> |
|---------|------------|---------------|-----------------|
| Voltage | | 12.6 | 6.3 volts |
| Current | | 0.15 | 0.3 amps. |

Ratings - Absolute maximum values.

| | |
|--|-----------------------------|
| Maximum heater voltage variation | $\pm 5\%$ of nominal value. |
| Maximum heater-cathode voltage: | |
| Heater negative with respect to cathode | 200 Volts |
| Heater positive with respect to cathode | 200 volts |
| Maximum cathode current (Each section) | 20 mA |
| Maximum anode voltage | 330 volts |
| Maximum anode dissipation (Each section) | 3.0 watts |
| Maximum bulb temperature (at hottest spot on bulb surface) | 200°C |

RANGE OF CHARACTERISTIC VALUES FOR EQUIPMENT DESIGN. (At Zero hours)Test conditions $V_a = 250V$, $V_g = -8.5V$ Each Section

| | <u>Min.</u> | <u>Bogey.</u> | <u>Max.</u> |
|-------------------------------|-------------|---------------|-------------|
| Anode current | 6.5 | 10.5 | 14.5 mA |
| Mutual conductance | 1.75 | 2.2 | 2.65 mA/V |
| Anode current at $V_g = -25V$ | | | 20 μA |
| Amplification factor | 15.5 | 17.0 | 18.5 |
| Anode impedance | | 7.7 | k Ω |

Maximum value of cathode interface resistance throughout life under cut-off conditions 10 Ω