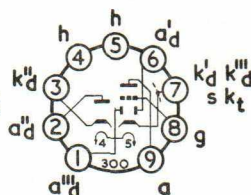


## TRIPLE DIODE TRIODE



B9A Base

### GENERAL

This triple diode triode is intended for use in FM and AM/FM, AC mains receivers. The first diode is for AM detection with the second and third diodes designed for use as the FM ratio detector. The high  $\mu$  triode is for audio amplification.

|                |       |        |
|----------------|-------|--------|
| Heater Voltage | $V_h$ | 6.3 V  |
| Heater Current | $I_h$ | 0.45 A |

### RATINGS

|                                                                            |                         |             |    |
|----------------------------------------------------------------------------|-------------------------|-------------|----|
| Maximum Triode Anode Dissipation                                           | $P_a(\text{max})$       | 1           | W  |
| Maximum Triode Anode Voltage                                               | $V_a(\text{max})$       | 300         | V  |
| Maximum Triode Heater to Cathode Voltage (d.c.)                            | $V_{h-kt}(\text{max})$  | 150         | V  |
| Maximum Peak Inverse Voltage (All diodes)                                  | $PIV(\text{max})$       | 350         | V  |
| Maximum Triode Cathode Current                                             | $I_{kt}(\text{max})$    | 5           | mA |
| Maximum Anode Current. Diode 1                                             | $I_{a'd}(\text{max})$   | 1           | mA |
| Maximum Anode Current. Diode 2                                             | $I_{a''d}(\text{max})$  | 10          | mA |
| Maximum Anode Current. Diode 3                                             | $I_{a'''d}(\text{max})$ | 10          | mA |
| Ratio Anode Resistance ( $\delta V_a / \delta I_a$ )<br>Diode 2 to Diode 3 |                         | 0.65 to 1.5 |    |

### INTER-ELECTRODE CAPACITANCES

|                                 | $\dagger$     | $\ddagger$ | $\S$  |          |
|---------------------------------|---------------|------------|-------|----------|
| Grid to Earth                   | $C_{g-E}$     | 1.9        | 2.2   | 3.0 pF   |
| Anode Triode to Earth           | $C_{a-E}$     | 1.4        | 1.9   | 2.6 pF   |
| Anode Triode to Grid            | $C_{a-g}$     | 2.0        | 2.1   | 2.4 pF   |
| Anode Triode to Anode Diode 1   | $C_{a-a'd}$   | 0.08       | 0.09  | 0.10 pF  |
| Anode Triode to Anode Diode 3   | $C_{a-a'''d}$ | 0.05       | 0.11  | 0.22 pF  |
| Anode Triode to Cathode Diode 2 | $C_{a-k''d}$  | 0.006      | 0.011 | 0.016 pF |
| Grid to Anode Diode 1           | $C_{g-a'd}$   | 0.06       | 0.07  | 0.10 pF  |
| Grid to Anode Diode 3           | $C_{g-a'''d}$ | 0.012      | 0.021 | 0.035 pF |

Inter-electrode Capacitances (continued overleaf)

|                                                                                   |                                        | †      | ‡      | §      |    |
|-----------------------------------------------------------------------------------|----------------------------------------|--------|--------|--------|----|
| Grid to Cathode Diode 2                                                           | $C_{g-k''d}$                           | 0.0025 | 0.0044 | 0.0066 | pF |
| Cathode Diode 2 to All                                                            | $C_{k''d-all}$                         | 4.9    | 5.3    | 6.4    | pF |
| Anode Diode 3 to All                                                              | $C_{a'''d-all}$                        | 5.1    | 5.6    | 6.6    | pF |
| Anode Diode 1 to Heater, Cathodes Triode,<br>Diode 1, Diode 3 and Shield          | $C_{a'd-h,kt},$<br>$k'd,k'''d,s$       | 0.8    | 1.1    | 1.7    | pF |
| Anode Diode 2 to Heater, Cathodes Diode 2,<br>Triode, Diode 1, Diode 3 and Shield | $C_{a''d-h,k''d,kt},$<br>$k'd,k'''d,s$ | 4.8    | 5.0    | 5.4    | pF |

† In fully shielded socket without can.

‡ With holder capacity balanced out (Holder as below).

§ Total capacity including B9A nylon phenolic holder without skirt or radial shield (AEI holder type VH19/902).

"Earth" denotes the electrodes of any second valve section and the remaining earthy potential electrodes of the section under measurement, heater and shields joined to cathode.

### TRIODE CHARACTERISTICS

|                                                      |       |      |            |
|------------------------------------------------------|-------|------|------------|
| Anode Voltage                                        | $V_a$ | 100  | V          |
| Anode Current                                        | $I_a$ | 0.8  | mA         |
| Grid Voltage                                         | $V_g$ | -1   | V          |
| Amplification Factor                                 | $\mu$ | 70   |            |
| Mutual Conductance                                   | $g_m$ | 1.45 | mA/V       |
| Valve Anode Resistance ( $\delta V_a / \delta I_a$ ) | $r_a$ | 48   | k $\Omega$ |

### TYPICAL OPERATION AS RESISTANCE COUPLED AMPLIFIER (Grid current bias)

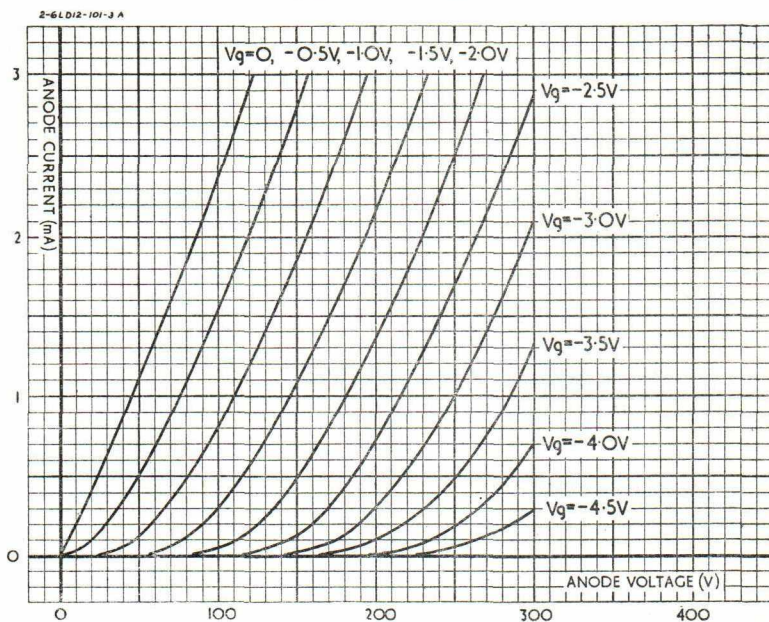
|                                  |           |      |      |      |     |     |      |            |
|----------------------------------|-----------|------|------|------|-----|-----|------|------------|
| Supply Voltage                   | $V_b$     | 170  | 170  | 170  | 200 | 200 | 200  | V          |
| Anode Load Resistance            | $R_a$     | 47   | 100  | 220  | 47  | 100 | 220  | k $\Omega$ |
| Grid Resistor                    | $R_g$     | 10   | 10   | 10   | 10  | 10  | 10   | M $\Omega$ |
| Anode Current                    | $I_a$     | 1.25 | 0.82 | 0.46 | 1.6 | 1.0 | 0.56 | mA         |
| Grid Resistor of Following Valve |           | 150  | 330  | 680  | 150 | 330 | 680  | k $\Omega$ |
| Voltage Amplification            |           | 32   | 42   | 51   | 34  | 44  | 53   |            |
| Total Distortion                 | $D_{tot}$ |      |      |      |     |     |      |            |
| for $V_{out}$ (r.m.s.) = 3V      |           | 0.6  | 0.5  | 0.4  | 0.5 | 0.4 | 0.3  | %          |
| for $V_{out}$ (r.m.s.) = 5V      |           | 1.1  | 0.8  | 0.5  | 0.9 | 0.6 | 0.4  | %          |
| for $V_{out}$ (r.m.s.) = 8V      |           | 2.0  | 1.3  | 1.1  | 1.5 | 1.0 | 0.9  | %          |

### MOUNTING POSITION—Unrestricted.

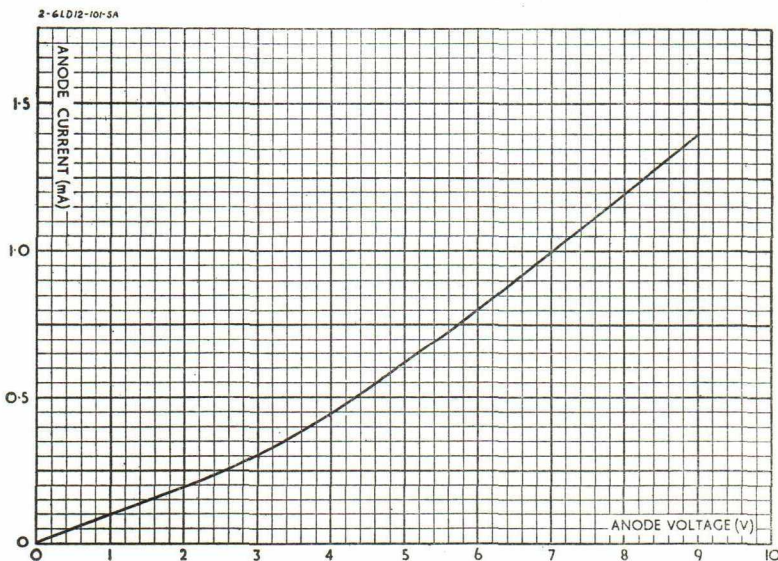
### APPROXIMATE WEIGHT

|        |         |
|--------|---------|
| Net    | 0.5 oz  |
| Packed | 0.75 oz |

$I_a/V_a$  : Triode Section



$I_a/V_a$  : Diode Section 1



$I_a/V_a$ : Diode Section 2 or 3

