

Comm. & P. 126

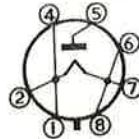
RADIOTRON TYPE AV33 TUNGSTEN FILAMENT CONTROL DIODE

GENERAL DATA

Mechanical:

| | |
|------------------------|----------------------------------|
| Mounting Position | Any |
| Maximum Overall Length | 4" |
| Maximum Seated Height | 3 ⁷ / ₁₆ " |
| Maximum Diameter | 1 ³ / ₁₆ " |
| Bulb | T-9 |
| Base | Intermediate Octal 7-pin |
| Base Connections for | |
| Pins 1, 2, 4 Filament | |
| Pin 5 Plate | |
| Pins 6, 7, 8 Filament | |

BOTTOM VIEW



Electrical:

Ratings —

| | |
|---------------------------------|------------------|
| Filament Voltage (a.c. or d.c.) | 4.3 max. volts |
| Filament Current | 1.0 approx. amps |
| D.C. Plate Voltage | 250 max. volts |
| Plate Current | 10 max. mA |

Typical operation:

| | | |
|--|------------|-------|
| D.C. Plate Voltage | 100 | volts |
| Plate Current, saturated | 3 | mA |
| A.C. Filament Voltage | 3.7 approx | volts |
| Filament Current | 0.96 | amp |
| Minimum Plate Voltage for approx. 80% sat. plate current | 20 | volts |

APPLICATION DATA

A typical circuit for A.C. voltage regulation is shown in Figure 1. Referring to this circuit, the A.C. input voltage is applied to an autotransformer T_1 in series with the A.C. winding of a saturable reactor L_1 . The output voltage is preset by the rheostat R_1 to the desired value.

Any increase in output voltage caused by a rise in input voltage or a decrease in the load current, increases the filament voltage of the diode V_1 , and thus reduces its effective plate resistance. The grid of V_2 then becomes more negative decreasing the current through the D.C. winding of L_1 . This increases the effective series inductance of the A.C. winding of L_1 and so decreases the voltage across the auto-transformer T_1 to compensate for the initial voltage increase. Similar reasoning shows that regulation is also obtained for an initial decrease in output voltage.

Typical regulators of this type maintain output voltage accurately to 0.5% over a 10 to 1 range in load current, for input voltages varying $\pm 20\%$ from normal mains voltage. The waveform distortion introduced by these regulators can be made less than 5%.

Possible applications of the type AV33 diode are widespread. The thermal inertia of its filament is low and thus response time is fast. In regulators of the above type the AV33 provides high inherent accuracy and reliability. Furthermore the AV33 is insensitive to changes in frequency which is an advantage in critical applications.

It is mechanically and electrically similar to the services type CV430.

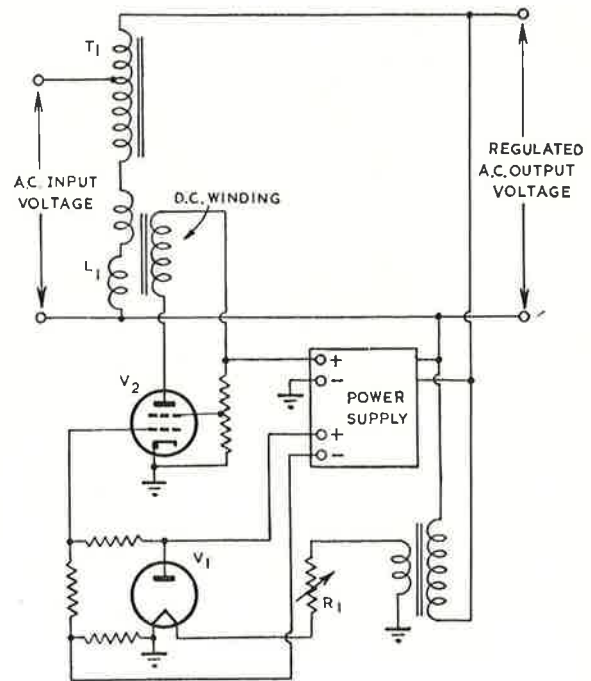


Fig. 1. Typical circuit.

AV 33

AVERAGE FILAMENT VOLTAGE — ANODE CURRENT CHARACTERISTICS

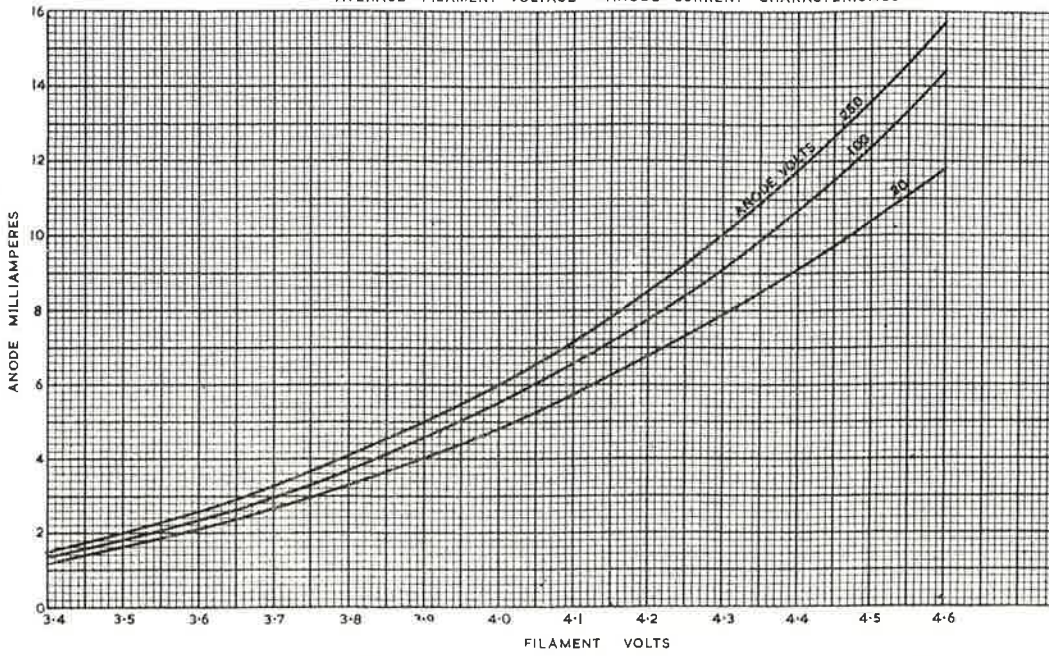


Fig. 2 (above). Filament Voltage — Plate Current Curves.

Fig. 3 (below). Filament Voltage — Filament Current Curve.

AV 33

AVERAGE FILAMENT CHARACTERISTIC

