**Sylvania**

**TYPE 5722**

**NOISE GENERATING DIODE**

**RATINGS AND CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Filament Voltage</td>
<td>5.5 Volts</td>
</tr>
<tr>
<td>Minimum Filament Voltage</td>
<td>2.0 Volts</td>
</tr>
<tr>
<td>Filament Current at 4.9 Volts</td>
<td>1.6 Amperes</td>
</tr>
<tr>
<td>Maximum DC Plate Voltage</td>
<td>200 Volts</td>
</tr>
<tr>
<td>Maximum Plate Current</td>
<td>35 Ma.</td>
</tr>
<tr>
<td>Maximum Plate Dissipation Continuous Service</td>
<td>3.5 Watts</td>
</tr>
<tr>
<td>Continuous Service</td>
<td>5.0 Watts</td>
</tr>
<tr>
<td>Maximum On Period in 50% Duty Cycle</td>
<td>5 Min.</td>
</tr>
<tr>
<td>Direct Inter electrode Capacitances: **</td>
<td>1.5 μF</td>
</tr>
<tr>
<td>Plate to Filament</td>
<td></td>
</tr>
</tbody>
</table>

* Horizontal operation permitted if Pins 1 and 2 are in vertical plane.

**BASE PIN CONNECTIONS**

- Pin 1 - Plate
- Pin 2 - No Connection
- Pin 3 - Filament
- Pin 4 - Filament
- Pin 5 - No Connection
- Pin 6 - Plate
- Pin 7 - Filament Center

**RMA Basing 5 CB**

**PHYSICAL SPECIFICATIONS**

- Style: Miniature
- Bulb: T 5 1/2
- Diameter: 3/4" Max.
- Seated Height: 1 7/8" Max.
- Overall Length: 2 1/8" Max.
- Mounting: Vertical

**TYPICAL OPERATING CONDITIONS**

- Plate Voltage: 150 Volts
- Filament Voltage: Adjust to give desired Plate Current or Noise Output

**CIRCUIT APPLICATION**

Sylvania Type 5722 is a tungsten filament diode designed for use as a noise generator at frequencies up to 400 or 500 mc. The filament center tap allows better RF grounding of the filament when used in the recommended circuit shown on a following page.

Since the tube has a tungsten filament the "shot effect" may be used as a standard noise source if sufficient plate voltage is applied to obtain saturation. The noise factor (NF) may be obtained from the equation

\[ NF = 20 \log_{10} \frac{20\, \text{IR}}{R} \]

where \( R \) is the total generator resistance and \( I \) is the diode plate current in amperes. To convert to decibels \( NF_{\text{db}} = 10 \log_{10} \frac{20\, \text{IR}}{R} \).

In use, the diode is coupled to the input of the amplifier under test and the filament voltage is increased until the noise output power is double that read without the diode. From the plate current reading and the generator resistance the noise factor can be calculated. Additional construction details may be obtained from the article "How Sensitive is Your Receiver", by Byron Goodman in the September 1947 issue of Q.S.T. and also "Coaxial Noise Diode" by H. Johnson, RCA Review, March, 1947, Volume VIII, No. 1.

The useful life is dependent on the operating voltages since the usual causes of failure are burnout or vaporization of the tungsten filament. A curve is given on a following page which shows this relationship.
RECOMMENDED CIRCUIT

PARTS LIST

C₁, C₂, C₃, C₄, C₅  }  500 μF
RFC₁, RFC₂  }  6 Turns #16 Enamel Wire on 3/16” Air Core
RFC₃, RFC₄  }  30 Turns #16 Enamel Wire on 3/8” O.D., 1/4” I.D. Bakelite Coil Form With Powdered Iron Core
R₁  }  50 to 300 Ohms as Required to Match Load
R₂  }  Filament Voltage Control

OUTPUT
SYLVANIA TYPE 5722
LIFE EXPECTANCY VS FILAMENT VOLTS
$E_b = 100$ VOLTS

LIFE END POINT DETERMINED BY
40% REDUCTION IN FILAMENT DIAMETER

LIFE EXPECTANCY IN HOURS

FILAMENT VOLTS