**6BK7-B**

**TWIN TRIODE**

**DESCRIPTION AND RATING**

The 6BK7-B is a miniature twin triode designed primarily for use as a cascode amplifier at frequencies below approximately 300 megacycles. It is especially useful as the radio-frequency amplifier in very-high-frequency television tuners or as the intermediate-frequency preamplifier in ultra-high-frequency tuners. Its performance as a cascode amplifier is characterized by high gain and low noise figure. Electrically and physically, the 6BK7-B is a replacement for the 6BK7 and the 6BK7-A.

**GENERAL**

**ELECTRICAL**
- Cathode—Coated Unipotential
- Heater Voltage, AC or DC ................. 6.3 Volts
- Heater Current ......................... 0.45 Amperes
- Heater Warm-up Time* .................. 11 Seconds

**MECHANICAL**
- Mounting Position—Any
- Envelope—T-6 1/2, Glass
- Base—E9-1, Small Button 9-Pin

**DIRECT INTERELECTRODE CAPACITANCES†**
- Section 1
  - Grid to Plate: (g to p) .................. 1.8 pf
  - Input: g to (h + k) ....................... 3.0 pf
  - Output: p to (h + k) ..................... 1.0 pf
  - Heater to Cathode: (h to k) ............. 2.8 pf
  - Grid to Grid: (lg to 2g), maximum .......... 0.004 pf
  - Plate to Plate: (1p to 2p), maximum ......... 0.075 pf
  - Plate to Cathode: (p to k) ................ 0.22 pf
  - Grounded-Grid Input: k to (h + g) .......... 6.0 pf
  - Grounded-Grid Output: p to (h + g) ......... 2.4 pf

**MAXIMUM RATINGS**

**DESIGN-CENTER VALUES, EACH SECTION**
- Plate Voltage ........................... 300 Volts
- Negative DC Grid Voltage ............... 50 Volts
- Plate Dissipation ....................... 2.7 Watts

**TERMINAL CONNECTIONS**
- Pin 1—Plate (Section 2)
- Pin 2—Grid (Section 2)
- Pin 3—Cathode (Section 2)
- Pin 4—Heater
- Pin 5—Heater
- Pin 6—Plate (Section 1)
- Pin 7—Grid (Section 1)
- Pin 8—Cathode (Section 1)
- Pin 9—Internal Shield‡

**PHYSICAL DIMENSIONS**

**BASE DIAGRAM**

Supersedes ET-11259 dated 1-56
CHARACTERISTICS AND TYPICAL OPERATION

CLASS A; AMPLIFIER, EACH SECTION

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>150 Volts</td>
</tr>
<tr>
<td>Cathode-Bias Resistor</td>
<td>56 Ohms</td>
</tr>
<tr>
<td>Amplification Factor</td>
<td>43</td>
</tr>
<tr>
<td>Plate Resistance, approximate</td>
<td>4600 Ohms</td>
</tr>
<tr>
<td>Transconductance</td>
<td>9300 Micromhos</td>
</tr>
</tbody>
</table>

* The time required for the voltage across the heater to reach 80 percent of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.

† Without external shield.

‡ It is recommended that pin 9 be grounded.

Plate Current | 18 Milliamperes |
Grid Voltage, approximate | 11 Volts |
Ib | 10 Microamperes |
Noise Figure | 7 Decibels |

§ When the tube is used as a cascode amplifier and the two sections are connected in series, this voltage may be as high as 300 volts maximum under cutoff conditions.

‖ As measured in a cascode amplifier which has a balanced 300-ohm input system and which operates at a plate supply voltage of 250 volts, a plate current of 18 milliamperes, a frequency of 200 megacycles, a stage bandwidth of 7 megacycles, and an effective noise bandwidth of 3.5 megacycles.

Design-Center ratings are limiting values of operating and environmental conditions applicable to a bogey electron tube of a specified type as defined by its published data and should not be exceeded under normal conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube in average applications, making allowance for normal changes in operating conditions due to rated supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of the tube under consideration and of all other electron devices in the equipment.

The equipment manufacturer should design so that initially no design-center value for the intended service is exceeded with a bogey tube under normal operating conditions at the stated normal supply voltage.

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