

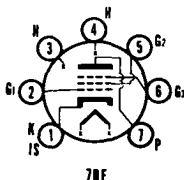
Color Television Type

**GATED BEAM DISCRIMINATOR****6BN6/6KS6**

3BN6, 4BN6, 12BN6

**Pentode**

Construction ..... Miniature T-5½  
 Base ..... Button 7 Pin, E7-1  
 Basing ..... 7DF  
 Outline ..... 5-3  
 Maximum Diameter ..... 0.750 In.  
 Maximum Seated Height ..... 2.375 In.  
 Maximum Overall Height ..... 2.625 In.

**ELECTRICAL DATA****HEATER OPERATION**

|                                         | 3BN6 | 4BN6 | 12BN6 | 6BN6/6KS6 |
|-----------------------------------------|------|------|-------|-----------|
| Heater Voltage.....                     | 3.16 | 4.2  | 12.6  | 6.3 Volts |
| Heater Current .....                    | 600  | 450  | 150   | 300 Ma    |
| Heater Warm-up Time .....               | 11   | 11   | —     | — Seconds |
| Maximum Heater-Cathode Voltage          |      |      |       |           |
| Heater Negative with Respect to Cathode |      |      |       |           |
| Total DC and Peak.....                  |      |      |       | 200 Volts |
| Heater Positive with Respect to Cathode |      |      |       |           |
| DC .....                                |      |      |       | 100 Volts |
| Total DC and Peak.....                  |      |      |       | 200 Volts |

**DIRECT INTERELECTRODE CAPACITANCES (Unshielded)**

|                                         |          |
|-----------------------------------------|----------|
| Grid No. 1 to All Other Electrodes..... | 4.2 Pf   |
| Grid No. 3 to All Other Electrodes..... | 3.3 Pf   |
| Grid No. 1 to Grid No. 3 (Max.).....    | 0.004 Pf |

**RATINGS (Design Center Rating System)**

|                                                        |           |
|--------------------------------------------------------|-----------|
| Plate Supply Voltage (Max.) .....                      | 300 Volts |
| Grid No. 2 Voltage (Accelerator) (Max.) .....          | 100 Volts |
| Peak Positive Grid No. 1 Voltage (Limiter) (Max.)..... | 55 Volts  |
| Total Cathode Current (Max.).....                      | 11.5 Ma   |

**CHARACTERISTICS AND TYPICAL OPERATION****Limiter-Discriminator Service**

|                                                                       |         |         |                 |
|-----------------------------------------------------------------------|---------|---------|-----------------|
| Plate Supply Voltage.....                                             | 85      | 285     | 270 Volts       |
| Plate Voltage .....                                                   | 63      | 122     | 121 Volts       |
| Grid No. 2 Voltage .....                                              | 55      | 100     | 100 Volts       |
| Cathode Bias Resistor (Variable) <sup>(1)</sup> .....                 | 200-400 | 200-400 | 200-400 Ohms    |
| Plate Current .....                                                   | 0.25    | 0.49    | 0.44 Ma         |
| Grid No. 2 Current .....                                              | 4.1     | 9.8     | 10.0 Ma         |
| Plate Load Resistor .....                                             | 85,000  | 330,000 | 330,000 Ohms    |
| Plate Linearity Resistor.....                                         | 470     | 1500    | 1000 Ohms       |
| Integrating Capacitor .....                                           | 0.002   | 0.001   | 0.001 µf        |
| Coupling Capacitor .....                                              | 0.25    | 0.01    | 0.25 µf         |
| Input Signal Center Frequency .....                                   | 10.7    | 10.7    | 4.5 Megahertz   |
| Frequency Deviation .....                                             | ± 75    | ± 75    | ± 25 Kiloherztz |
| Minimum Signal Voltage for Limiting Action (RMS) <sup>(2)</sup> ..... | 1.25    | 1.25    | 1.25 Volts      |
| Input Signal Level for AM Rejection Adjustment <sup>(1)</sup> .....   | 1.25    | 2.0     | 2.0 Volts       |
| AM Rejection at Esig = 2.0 Volts (RMS) .....                          | 31      | 20      | 25 Decibels     |
| AM Rejection at Esig = 3.0 Volts (RMS) .....                          | 30      | 29      | 30 Decibels     |
| Total Harmonic Distortion .....                                       | 2.0     | 1.6     | 1.8 Percent     |
| Peak Audio Output Voltage .....                                       | 6.0     | 16.6    | 16.8 Volts      |

**NOTES:**

- The cathode resistor should be adjusted for maximum AM rejection in the output of the limiter-discriminator stage at the specified signal level. AM rejection is measured with an applied signal containing 30% AM and 30% FM.
- At signal levels above specified value, limiting is within ± 2 decibels. Adequate shielding between components of the limiter grid and the quadrature grid must be used to insure proper phasing of the voltage developed at the quadrature grid. Standard de-emphasis requirements for FM are included. The Q of the quadrature grid circuit should be high enough to develop a minimum of 4 volts (RMS) signal with 2 volts (RMS) of the center-frequency signal applied to the limiter grid. It is recommended that the coil be shunted by a minimum of 10 Pf. The capacitance may be composed of tube input capacitance, stray capacitance, and distributed capacitance, as well as physical capacitance.