Beam Triode

High-Voltage, Low-Current Type
For DC Power Supplies in Color-TV Receivers

ELECTRICAL

Heater Characteristics and Ratings
Voltage (AC or DC) .................................... 6.3 ± 0.6 V
Current at 6.3 V ....................................... 0.200 A
Peak heater–cathode voltage:
Heater negative with respect to cathode, 450° max V
Heater positive with respect to cathode, Not Recommended

Direct Interode Capacitances (Approx.)
Without external shield
Grid to plate ........................................... 0.03 pF
Grid to cathode and heater ......................... 2.6 pF
Plate to cathode and heater ....................... 1.0 pF

MECHANICAL

Operating Position ..................................... Any
Maximum Overall Length .............................. 5 in
Seated Length .......................................... 4-1/4 ± 3/16 in
Maximum Diameter .................................... 1-23/32 in
Bulb ..................................................... T12
Cap. ..................................................... Small (JEDEC No.CL-1 or CL-34)

Base (Alternates)
Short Jumbo-Shell Octal with External Barriers:
8-Pin (JEDEC Group 1, No.88-71)
Short Medium-Shell Octal with External Barriers:
8-Pin, Style B (JEDEC Group 1, No.88-118)

Basing Designation for BOTTOM VIEW .................. 8GC

Pin 1—Cathode
Pin 2—Heater
Pin 3—Do Not Use
Pin 4—Do Not Use
Pin 5—Grid
Pin 6—Do Not Use
Pin 7—Heater
Pin 8—Do Not Use
Cap—Plate

SHUNT VOLTAGE-REGULATOR SERVICE
Maximum Ratings, Design-Maximum Values

DC Plate Voltage .................................... 27000 V
Unregulated DC Supply Voltage ..................... 60000 V

Grid Voltage
Peakb .................................................. -440 V
DC .................................................... -135 V

DC Plate Current .................................... 1.6 mA
Plate Dissipation .................................... 40 W
Typical Operation

As Shunt Voltage-Regulator Tube in Accompanying Circuit

Unregulated Supply
DC Voltage .............................................. 36000 V
Equivalent resistance .................................. 11 MΩ

Voltage Divider Values
R₁ (5 W) ................................................. 220 MΩ
R₂ (2 W) .................................................. 1 MΩ
R₃ (1/2 W) ............................................... 0.82 MΩ

Reference Voltage Supply
DC Value .................................................. 200 V
Equivalent resistance .................................. 1000 Ω

Effective Grid-Plate Transconductance ............ 200 μmhos

DC Plate Current
For load current of 0 mA ................................ 1000 μA
For load current of 1 mA ................................ 45 μA

Regulated DC Output Voltage
For load current of 0 mA ................................ 25000 V
For load current of 1 mA ................................ 24500 V

MAXIMUM CIRCUIT VALUE
Grid-Circuit Resistance ................................ 3 MΩ

a Sufficient impedance should be used in series with the cathode to limit the cathode current under prolonged short-circuit conditions to 450 mA. This protective impedance will minimize the danger of heater burnout in case of a momentary internal arc within the tube.

b For 20 seconds maximum duration during equipment warm-up period.

CHARACTERISTICS RANGE VALUES

<table>
<thead>
<tr>
<th>Note</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid Voltage (1)</td>
<td>-7</td>
<td>V</td>
</tr>
<tr>
<td>Grid Voltage (2)</td>
<td>-40</td>
<td>V</td>
</tr>
<tr>
<td>Grid-Voltage Change</td>
<td>9</td>
<td>V</td>
</tr>
</tbody>
</table>

Note 1: With dc plate voltage of 30000 volts and dc plate current of 1 mA.

Note 2: With dc plate voltage of 30000 volts and dc plate current of 0.1 mA.

Note 3: Difference between grid voltage (1) and grid voltage (2).

OPERATING CONSIDERATIONS

The 6BK4B base pins fit the standard octal socket. Socket terminals for pins 3, 4, 6, and 8 should not be used for tie points. Otherwise, tube performance may be adversely affected.

The high voltages at which the 6BK4B is operated may be extremely dangerous to the user. Great care should be taken during the adjustment of circuits. The tube and its associated apparatus, especially all parts which may be at high potential with respect to ground, should be housed in a protective enclosure.

At maximum plate dissipation the plate of the 6BK4B shows a dull red color. Connection to the plate cap should be made by a connector with flexible lead to prevent any strain on the seal of the cap.
Operation of the 6BK4B with a plate voltage above approximately 16000 volts (absolute value) results in the production of X-Rays which can constitute a health hazard on prolonged exposure at close range unless the tube is adequately shielded. Relatively simple shielding should prove adequate, but the need for this precaution should be considered in equipment design.

SHUNT VOLTAGE-REGULATOR CIRCUIT

Typical performance data for this basic circuit with certain characteristics of the unregulated dc supply and related voltage-divider values are given in the tabulated data. Other combinations are feasible within the maximum ratings and the maximum circuit values for the 6BK4B.

DIMENSIONAL OUTLINE
JEDEC No. 12-36

DIMENSIONS IN INCHES

RADIO CORPORATION OF AMERICA
Electronic Components and Devices
Harrison, N. J.
Average Transfer Characteristics

$E_F = 6.3$ VOLTS

GRID VOLTS

PLATE MILLIAMPERES

92CM-8432RI

DATA 2
RADIO CORPORATION OF AMERICA
Electronic Components and Devices
Harrison, N. J.