

# 6BK4B

## 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 <sup>a</sup> max	V
Heater positive with respect to cathode. . . . .	Not Recommended	

#### Direct Interelectrode 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. C1-1 or C1-34)

#### Base (Alternates)

Short Jumbo-Shell Octal with External Barriers:

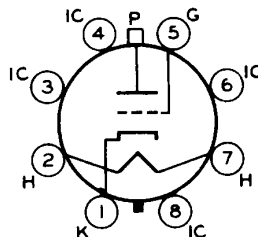
8-Pin (JEDEC Group 1, No. B8-71)

Short Medium-Shell Octal with External Barriers:

8-Pin, Style B (JEDEC Group 1, No. B8-118)

**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		
Peak <sup>b</sup> . . . . .	-440	V
DC . . . . .	-135	V
DC Plate Current . . . . .	1.6	mA
Plate Dissipation. . . . .	40	W



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DATA 1  
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# 6BK4B

## Typical Operation

*As Shunt Voltage-Regulator Tube in Accompanying Circuit*

<b>Unregulated Supply</b>		
DC Voltage . . . . .	36000	V
Equivalent resistance. . . . .	11	MΩ
<b>Voltage Divider Values</b>		
R <sub>1</sub> (5 W) . . . . .	220	MΩ
R <sub>2</sub> (2 W) . . . . .	1	MΩ
R <sub>3</sub> (1/2 W) . . . . .	0.82	MΩ
<b>Reference Voltage Supply</b>		
DC Value . . . . .	200	V
Equivalent resistance. . . . .	1000	Ω
<b>Effective Grid-Plate Transconductance.</b> . . . .	200	μmhos
<b>DC Plate Current</b>		
For load current of 0 mA . . . . .	1000	μA
For load current of 1 mA . . . . .	45	μA
<b>Regulated DC Output Voltage</b>		
For load current of 0 mA . . . . .	25000	V
For load current of 1 mA . . . . .	24500	V

### MAXIMUM CIRCUIT VALUE

<b>Grid-Circuit Resistance.</b> . . . . .	3	MΩ
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<sup>a</sup> 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.

<sup>b</sup> For 20 seconds maximum duration during equipment warm-up period.

### CHARACTERISTICS RANGE VALUES

	Note	Min	Max	
Grid Voltage (1) . . . . .	1	-7	-	V
Grid Voltage (2) . . . . .	2	-	-40	V
Grid-Voltage Change. . . . .	3	-	9	V

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.

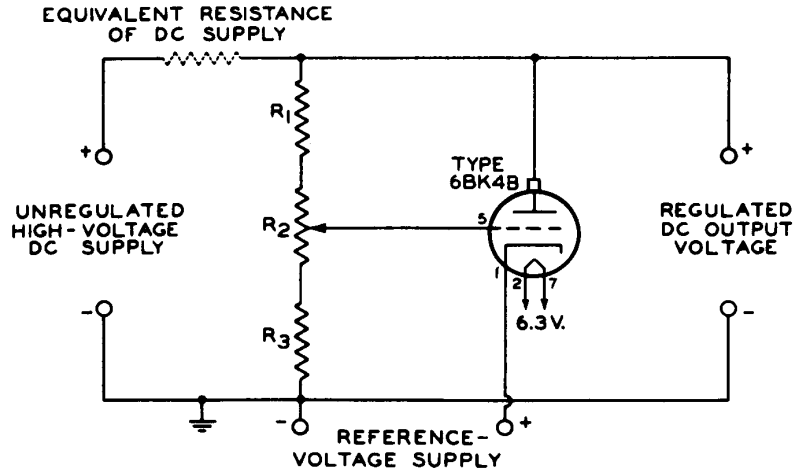
At maximum plate dissipation the plate of the 6BK4B shows a dull red color. Connection to the plate cap should be made by a connector with flexible lead to prevent any strain on the seal of the cap.



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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

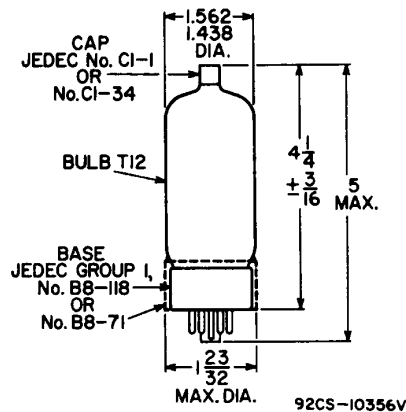


92CS-8435R3

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

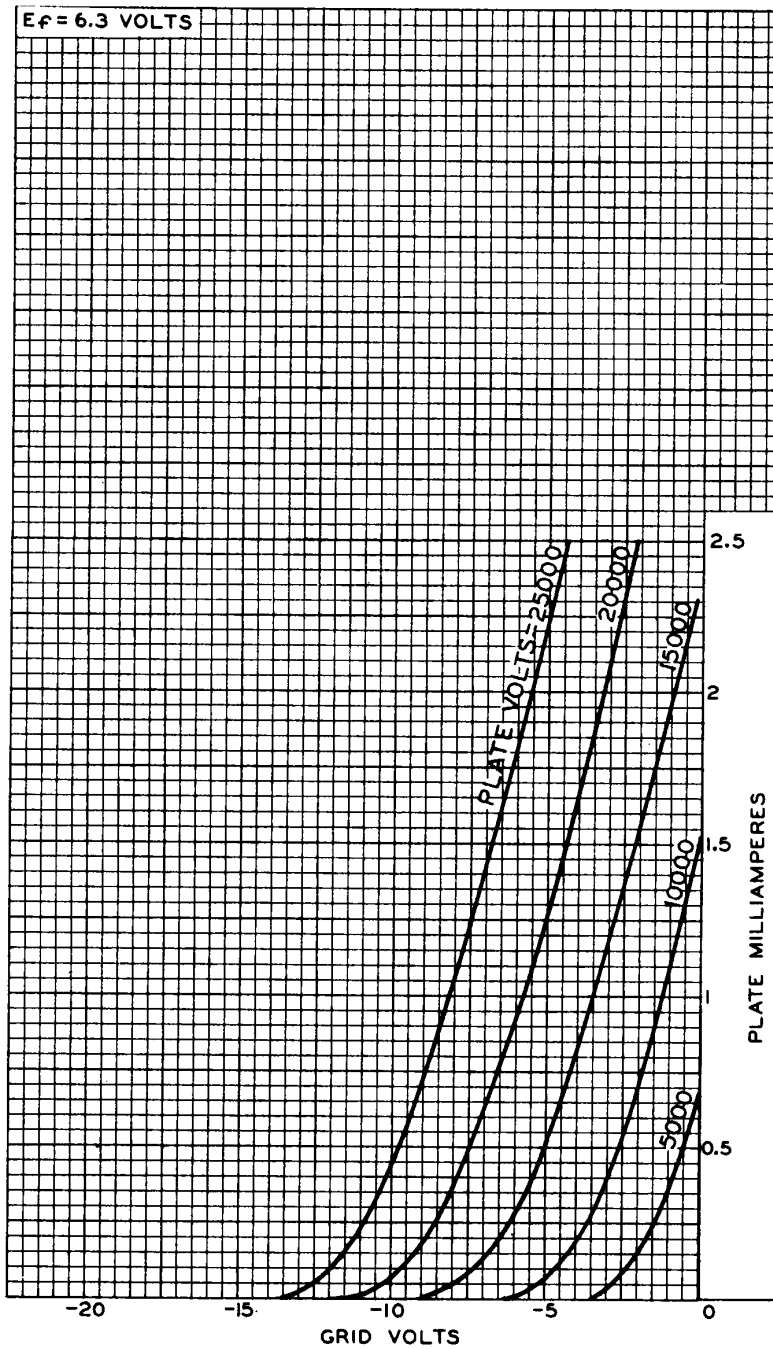


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# 6BK4B

## Average Transfer Characteristics



92CM-8432RI

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