

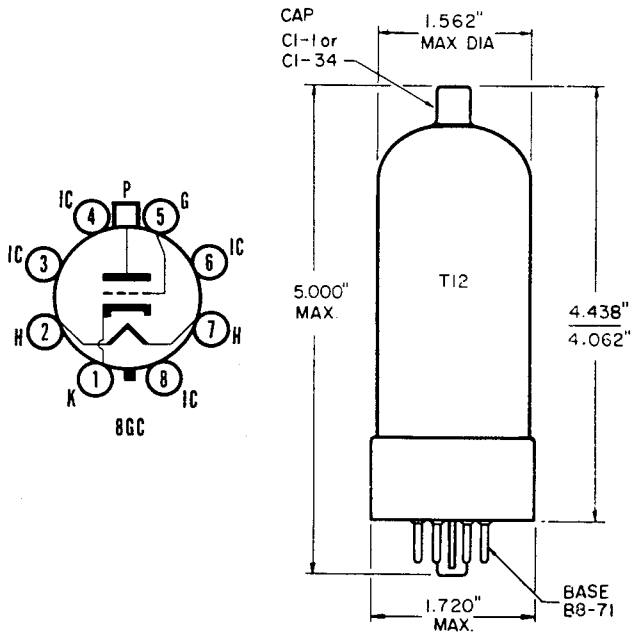
6BK4C6EL

# RECEIVING TUBES

## SYLVANIA

### Shunt Voltage Regulator 6BK4C

- QUALITY CONTROLLED FOR X-RADIATION
- COLOR TV TYPE
- BEAM TRIODE
- SHARP CUTOFF
- 27,000 V PLATE VOLTAGE
- 1.6 MA PLATE CURRENT
- 40 W PLATE DISSIPATION
- T-12 ENVELOPE
- 8 PIN BASE



#### DESCRIPTION

The Sylvania Type 6BK4C is a low current, **sharp** cutoff, beam triode designed for use as a voltage regulator in high voltage, low current supplies. The 6BK4C has a maximum plate voltage rating of 27,000 volts, a maximum **plate** current rating of 1.6 Ma and a maximum plate dissipation of 40 watts.

#### MECHANICAL DATA

Envelope .....	T-12
Base .....	B8-71 or B8-118
Outline Drawing.....	12-36
Maximum Diameter .....	1.720"
Maximum Seated Height .....	4.438"
Maximum Overall Length .....	5.000"
Cathode .....	Coated Unipotential
Operating Position .....	Any
Top Cap .....	C1-1 or C1-34

MECHANICAL DATA (Continued)

Basing Diagram .....	8GC
Pin No.1 - Cathode	Pin No.5 - Grid
Pin No.2 - Heater	Pin No.6 - Internal Connection - Do Not Use
Pin No.3 - Internal Connection - Do Not Use	Pin No.7 - Heater
Pin No.4 - Internal Connection - Do Not Use	Pin No.8 - Internal Connection - Do Not Use
	Top Cap - Plate

ELECTRICAL DATA

HEATER CHARACTERISTICS

Heater Voltage (AC or DC) (1) (Absolute Values) .....	6.3 ± 0.6	Volts
Heater Current (2) .....	200	Ma
Peak Heater-Cathode Voltage		
Heater Negative with Respect to Cathode .....	450	Volts <sup>(5)</sup> Max.
Heater Positive with Respect to Cathode .....	Not Recommended	

DIRECT INTERELECTRODE CAPACITANCES (Unshielded)

Grid to Plate .....	0.03	pf
Input (G to K + H) .....	2.6	pf
Output (P to K + H) .....	1.0	pf

RATINGS (Design Maximum Values Unless Otherwise Stated)

Voltage Control Service			
DC Plate Voltage .....	27,000	Volts	Absolute Max.
Unregulated DC Supply Voltage .....	60,000	Volts	Max.
Grid Voltage			
DC .....	-135	Volts	Max.
Peak (3) .....	-440	Volts	Max.
DC Plate Current .....	1.6	Ma	Absolute Max.
Plate Dissipation .....	40	Watts	Absolute Max.
Grid Circuit Resistance (4) .....	3	Meg.	Max.

Operation of the 6BK4C outside of the absolute values indicated above may result in either temporary or permanent changes in the X-radiation characteristics of the tube. Equipment design must be such that these absolute values are not exceeded.

AVERAGE CHARACTERISTICS

Amplification Factor .....	2,000
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TYPICAL OPERATION

Shunt Voltage Regulator

Unregulated Supply

DC Voltage .....	36,000	Volts
Equivalent Resistance .....	11	Megohms

Voltage Divider Values

R1 (5 Watts) .....	220	Megohms
R2 (2 Watts) .....	1	Megohm
R3 (1/2 Watts) .....	0.82	Megohm

Reference Voltage Supply

DC Value .....	200	Volts
Equivalent Resistance .....	1,000	Ohms

Effective Grid-Plate Transconductance ..... 200  $\mu$ mos

DC Plate Current

For Load Current of 0 Ma .....	1,000	$\mu$ a
For Load Current of 1 Ma .....	45	$\mu$ a

Regulated DC Output Voltage

For Load Current of 0 Ma .....	25,000	Volts
For Load Current of 1 Ma .....	24,500	Volts

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

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

Note 1: With DC Plate Voltage of 30,000 Volts and DC Plate Current of 1 Ma.

Note 2: With DC Plate Voltage of 30,000 Volts and DC Plate Current of 0.1 Ma.

Note 3: Difference Between Grid Voltage (1) and Grid Voltage (2).

X-RADIATION CHARACTERISTIC

Maximum X-Radiation ..... 1.5 mR/h

X-Radiation is measured in accordance with JEDEC Publication No.67, "Recommended Practice for Measurement of X-Radiation from Receiving Tubes", dated February 1968 and quality controlled in accordance with JEDEC Publication No.73, "Recommended Practice for Quality Control of X-Radiation Emitted from High Voltage Rectifier and Shunt Regulator Receiving Tubes".

Lot acceptance sampling procedures for the manufacturer's initial and life tests for X-Radiation are based upon MIL-STD-105, "Military Standard Sampling Procedures and Tables for Inspection by Attributes". Lot acceptance and life control limits are established substantially below the X-Radiation Characteristic Maximum.

### X-RADIATION WARNING

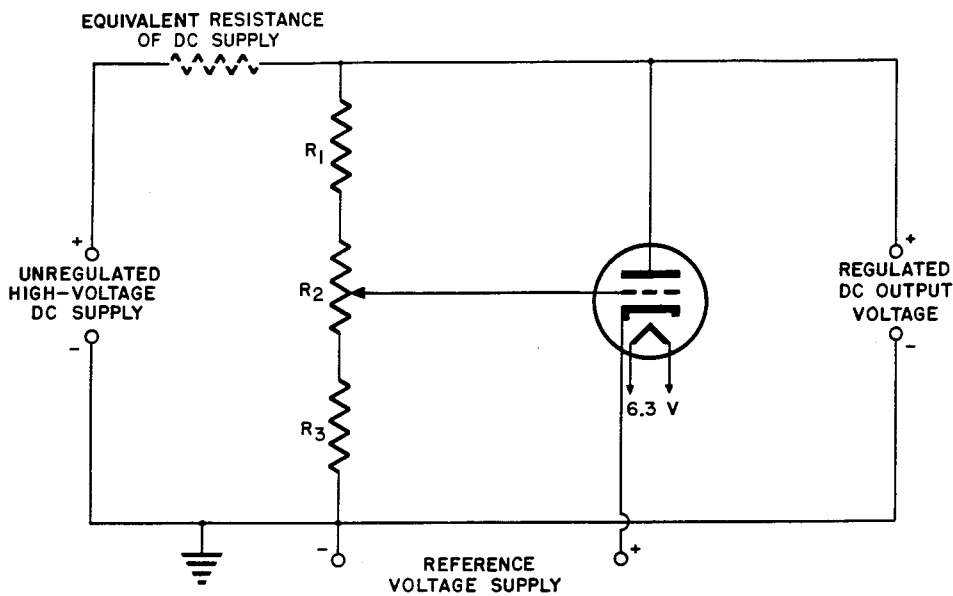
The high voltages associated with the 6BK4C result in the production of X-radiation which may constitute a health hazard on prolonged exposure at close range unless the tube is adequately shielded. Equipment design must provide for this shielding.

Precautions must be exercised during the servicing of equipment employing the 6BK4C to assure that all shielding components are replaced to their intended positions before the equipment is operated. The equipment manufacturer should provide a warning label in an appropriate position on the equipment to advise the serviceman of these precautions.

### NOTES:

- (1) The equipment designer should design the equipment so that heater voltage is centered at the specified bogey value, with heater supply variations restricted to maintain heater voltage within the specified tolerance.
- (2) Heater current of a bogey tube at  $E_f$  of 6.3 volts.
- (3) Peak value for maximum of 20 seconds during equipment warm-up.
- (4) With flyback transformer high voltage supply.
- (5) 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 burn-out in case of momentary internal arc within the tube.

SHUNT REGULATOR CIRCUIT



W55004

AVERAGE TRANSFER CHARACTERISTICS

