

### FOR TV VERTICAL-DEFLECTION AMPLIFIER APPLICATIONS

## DESCRIPTION AND RATING

The 6S4-A is a miniature medium-mu triode for use as the vertical-deflection amplifier in television receivers. The tube features relatively high plate current at low plate voltages and is capable of withstanding the high pulse voltages normally encountered in this application.

The 6S4-A also exhibits a controlled heater warm-up characteristic which makes it especially suited for use in television receivers which employ series-connected heaters. When the 6S4-A is used in conjunction with other 600-milliamper types which exhibit essentially the same heater warm-up characteristic, heater voltage surges across the individual tubes are minimized during the warm-up period.

### GENERAL

#### ELECTRICAL

Cathode—Coated Unipotential

Heater Voltage, AC or DC	6.3 Volts
Heater Current	$0.6 \pm 6\%$ Amperes
Heater Warm-up Time*	11 Seconds
Direct Interelectrode Capacitances, approximate†	
Grid to Plate	2.4 $\mu\mu\text{f}$
Input	4.2 $\mu\mu\text{f}$
Output	0.6 $\mu\mu\text{f}$

#### MECHANICAL

Mounting Position—Any  
 Envelope—T-6½, Glass  
 Base—E9-1, Small Button 9-Pin

### MAXIMUM RATINGS

#### DESIGN-MAXIMUM VALUES

#### UNLESS OTHERWISE INDICATED

DC Plate Voltage	550 Volts
Peak Positive Pulse Plate Voltage	2200§ Volts
Peak Negative Grid Voltage	250 Volts
Plate Dissipation¶	8.5 Watts
DC Cathode Current	30 Milliamperes
Peak Cathode Current	105 Milliamperes
Heater-Cathode Voltage	
Heater Positive with Respect to Cathode	
DC Component	100 Volts
Total DC and Peak	200 Volts
Heater Negative with Respect to Cathode	
Total DC and Peak	200 Volts
Grid Circuit Resistance	
With Cathode Bias	2.2 Megohms

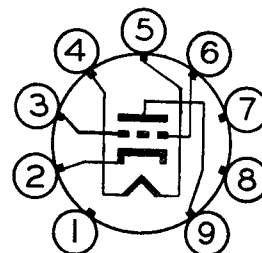
Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey tube of a specified type as defined by its published data, and should not be exceeded under the worst probable conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube, taking responsibility for the effects of changes in operating conditions due to variations in tube characteristics.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, and environmental conditions.

The tubes and arrangements disclosed herein may be covered by patents of General Electric Company or others. Neither the disclosure of any information herein nor the sale of tubes by General Electric Company conveys any license under patent claims covering combinations of tubes with other devices or elements. In the absence of an express written agreement to the contrary, General Electric Company assumes no liability for patent infringement arising out of any use of the tubes with other devices or elements by any purchaser of tubes or others.

### BASING DIAGRAM

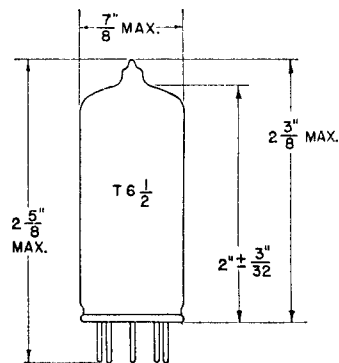


EIA 9AC

### TERMINAL CONNECTIONS

- Pin 1—Internal Connection—Do Not Use
- Pin 2—Cathode
- Pin 3—Grid
- Pin 4—Heater
- Pin 5—Heater
- Pin 6—Grid
- Pin 7—Internal Connection—Do Not Use
- Pin 8—Internal Connection—Do Not Use
- Pin 9—Plate

### PHYSICAL DIMENSIONS



EIA 6-3

## CHARACTERISTICS AND TYPICAL OPERATION

### AVERAGE CHARACTERISTICS

Plate Voltage.....	250	250	Volts
Grid Voltage.....	-15	-8	Volts
Amplification Factor.....		16.5	
Plate Resistance, approximate.....		3700	Ohms
Transconductance.....		4500	Micromhos
Plate Current.....	4.0	24	Milliamperes
Grid Voltage, approximate I <sub>b</sub> = 50 Microamperes.....		-22	Volts

\* 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.

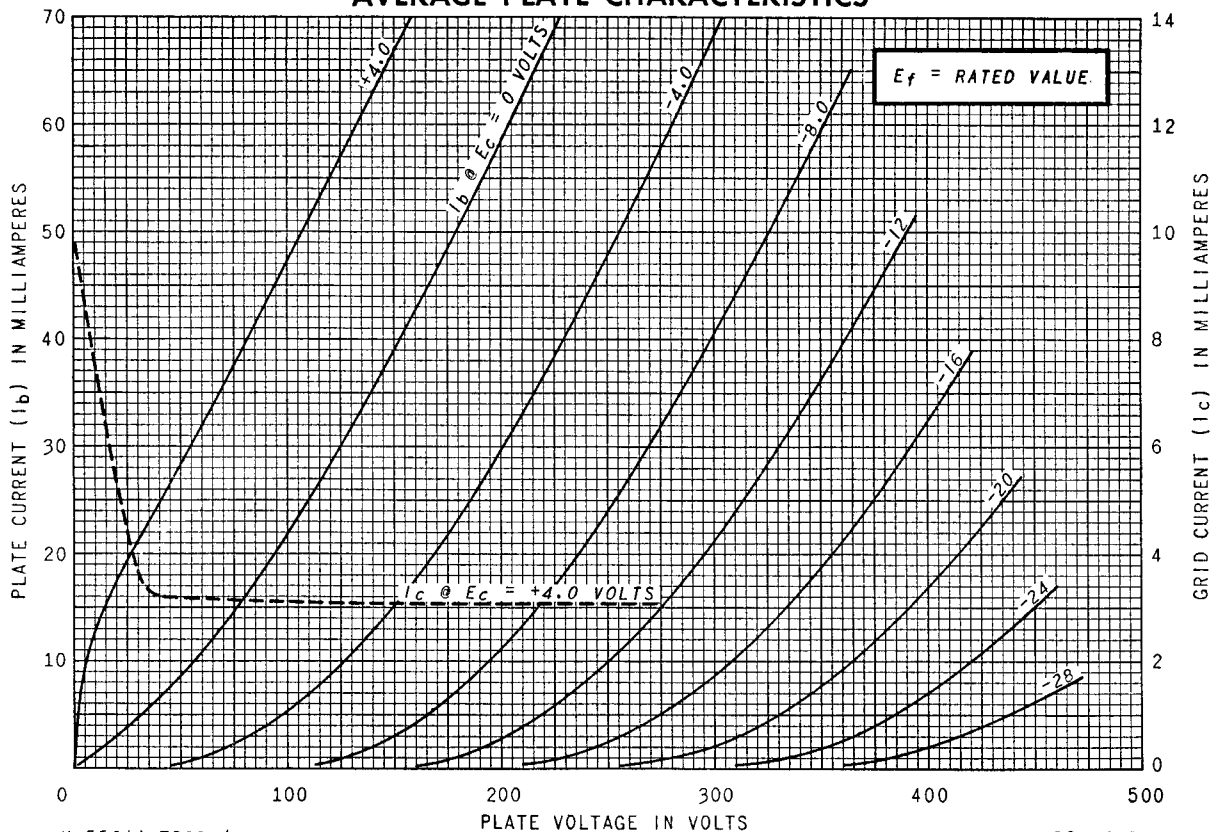
† Without external shield.

‡ For operation in a 525-line, 30-frame television system as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission. The duty cycle of the voltage pulse must not exceed 15 percent of one scanning cycle.

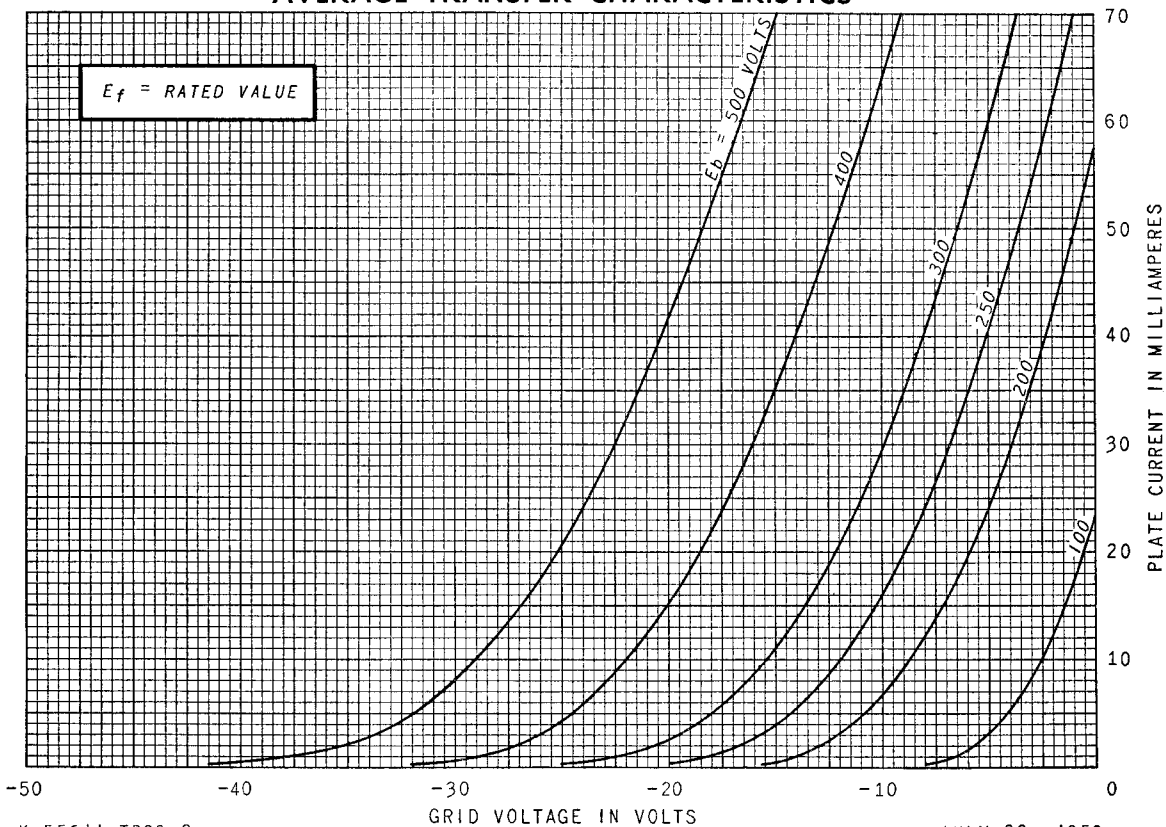
§ Value given is to be considered as an Absolute Maximum Rating. In this case, the combined effect of supply voltage variation, manufacturing variation including components in the equipment, and adjustment of equipment controls should not cause the rated value to be exceeded.

¶ In stages operating with grid-leak bias, an adequate cathode-bias resistor or other suitable means is required to protect the tube in the absence of excitation.

### AVERAGE PLATE CHARACTERISTICS



**AVERAGE TRANSFER CHARACTERISTICS**



**AVERAGE CHARACTERISTICS**

