

**DESCRIPTION AND RATING**

The 6AQ5-A is a miniature beam-power pentode designed for use in the audio-frequency power output stage of television and radio receivers. It may also be used as a triode-connected vertical deflection amplifier in television receivers.

**GENERAL**

ELECTRICAL			MECHANICAL	
Cathode—Coated Unipotential			Mounting Position—Any	
Heater Characteristics and Ratings			Envelope—T-5½, Glass	
	<b>Series Heater Operation</b>	<b>Parallel Heater Operation</b>	Base—E7-1, Miniature Button 7-Pin	
Heater Voltage, AC or DC	6.3	6.3 ± 0.6†	Outline Drawing—EIA 5-3	
Heater Current	0.45 ± 0.03*	0.45‡	Maximum Diameter	¼ Inches
Heater Warm-up Time§	11		Maximum Over-all Length	2 5/8 Inches
Direct Interelectrode Capacitances, approximate¶			Maximum Seated Height	2 3/8 Inches
Grid-Number 1 to Plate: (g1 to p)	0.4			
Input: g1 to (h+k+g2+b.p.)	8.0			
Output: p to (h+k+g2+b.p.)	8.5			

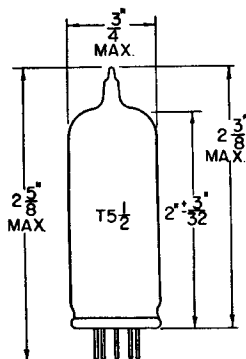
**MAXIMUM RATINGS**

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey electron 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, making allowance for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

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; environmental conditions, and variations in the characteristics of all other electron devices in the equipment.

**PHYSICAL DIMENSIONS**

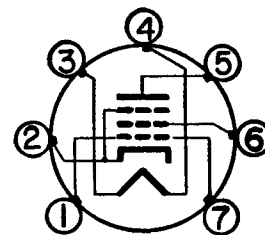


EIA 5-3

**TERMINAL CONNECTIONS**

- Pin 1—Grid Number 1
- Pin 2—Cathode and Beam Plates
- Pin 3—Heater
- Pin 4—Heater
- Pin 5—Plate
- Pin 6—Grid Number 2 (Screen)
- Pin 7—Grid Number 1

**BASING DIAGRAM**



EIA 7BZ

**MAXIMUM RATINGS**

**DESIGN-MAXIMUM VALUES**

	<b>Class A<sub>1</sub> Amplifier</b>	<b>Vertical-Deflection Amplifier * (Triode Connection) Δ</b>	
DC Plate Voltage.....	275	275	Volts
Peak Positive Pulse Plate Voltage.....		1100	Volts
Screen Voltage.....	275	.....	Volts
Peak Negative Grid-Number 1 Voltage.....		275	Volts
Plate Dissipation.....	12	10**	Watts
Screen Dissipation.....	2.0	.....	Watts
DC Cathode Current.....		40	Milliamperes
Peak Cathode Current.....		115	Milliamperes
Heater-Cathode Voltage			
Heater Positive with Respect to Cathode			
DC Component.....	100	100	Volts
Total DC and Peak.....	200	200	Volts
Heater Negative with Respect to Cathode			
Total DC and Peak.....	200	200	Volts
Grid-Number 1 Circuit Resistance			
With Fixed Bias.....	0.1	.....	Megohms
With Cathode Bias.....	0.5	2.2	Megohms
Bulb Temperature at Hottest Point.....	250	250	C

**CHARACTERISTICS AND TYPICAL OPERATION**

**CLASS A<sub>1</sub> AMPLIFIER**

Plate Voltage.....	180	250	Volts
Screen Voltage.....	180	250	Volts
Grid-Number 1 Voltage.....	-8.5	-12.5	Volts
Peak AF Grid-Number 1 Voltage.....	8.5	12.5	Volts
Plate Resistance, approximate.....	58000	52000	Ohms
Transconductance.....	3700	4100	Micromhos
Zero-Signal Plate Current.....	29	45	Milliamperes
Maximum-Signal Plate Current.....	30	47	Milliamperes
Zero-Signal Screen Current.....	3.0	4.5	Milliamperes
Maximum-Signal Screen Current.....	4.0	7.0	Milliamperes
Load Resistance.....	5500	5000	Ohms
Total Harmonic Distortion, approximate.....	8	8	Percent
Maximum-Signal Power Output.....	2.0	4.5	Watts

**PUSH-PULL CLASS AB<sub>1</sub> AMPLIFIER, VALUES FOR TWO TUBES**

Plate Voltage.....	250	250	Volts
Screen Voltage.....	250	250	Volts
Grid-Number 1 Voltage.....	-15	-15	Volts
Peak AF Grid-to-Grid Voltage.....	30	30	Volts
Zero-Signal Plate Current.....	70	70	Milliamperes
Maximum-Signal Plate Current.....	79	79	Milliamperes
Zero-Signal Screen Current.....	5.0	5.0	Milliamperes
Maximum-Signal Screen Current.....	13	13	Milliamperes
Effective Load Resistance, Plate-to-Plate.....	10000	10000	Ohms
Total Harmonic Distortion, approximate.....	5	5	Percent
Maximum-Signal Power Output.....	10	10	Watts

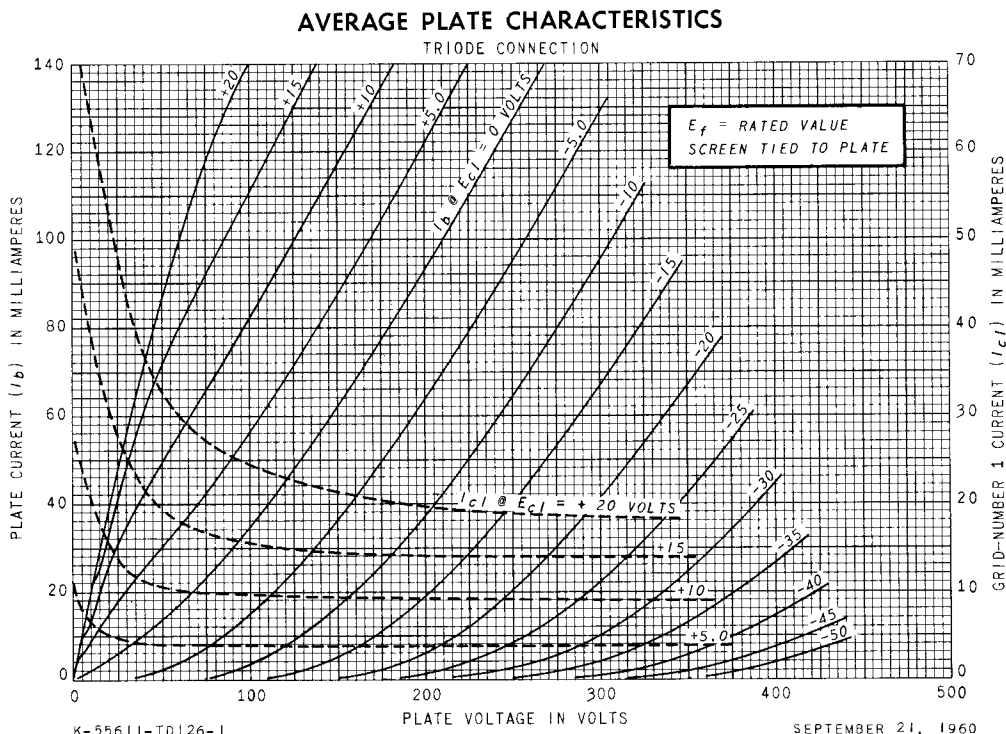
**AVERAGE CHARACTERISTICS, TRIODE CONNECTION Δ**

Plate Voltage.....	250	250	Volts
Grid-Number 1 Voltage.....	-12.5	-12.5	Volts
Amplification Factor.....	9.5	9.5	
Plate Resistance, approximate.....	1970	1970	Ohms
Transconductance.....	4800	4800	Micromhos
Plate Current.....	49.5	49.5	Milliamperes
Grid-Number 1 Voltage, approximate			
I <sub>b</sub> = 0.5 Milliamperes.....	-37	-37	Volts

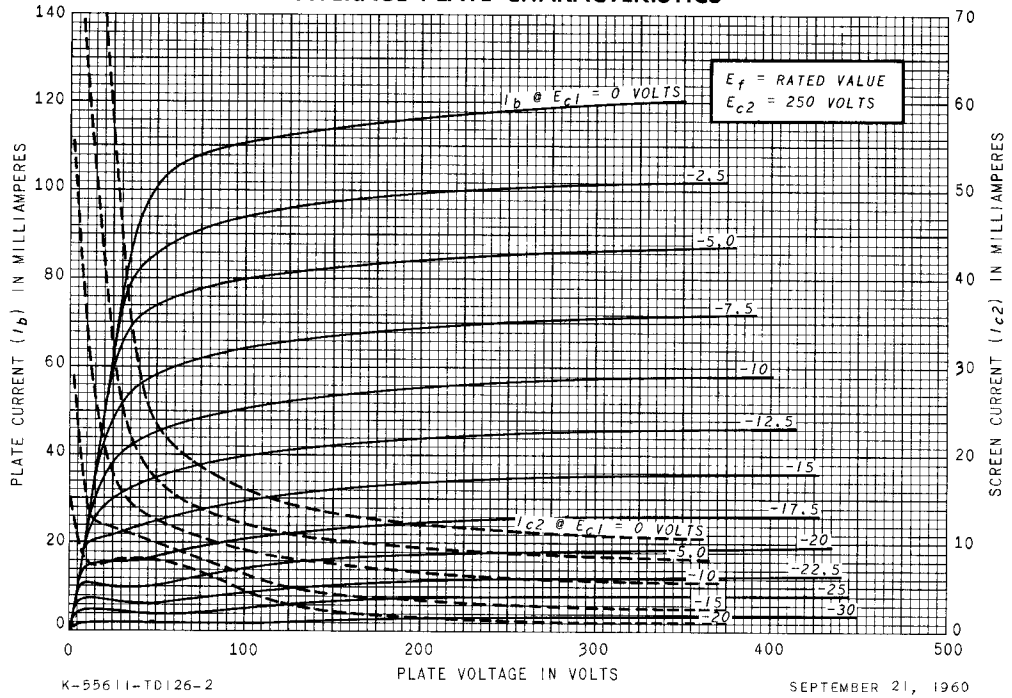
- \* For series heater operation, the equipment designer should design the equipment so that heater current is centered at the specified bogey value, with heater supply variations restricted to maintain heater current within the specified tolerance.
- † For parallel heater operation, the equipment designer 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.
- ‡ Heater current of a bogey tube at  $E_f = 6.3$  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.
- △ With screen tied to plate.
- \*\* 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.

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

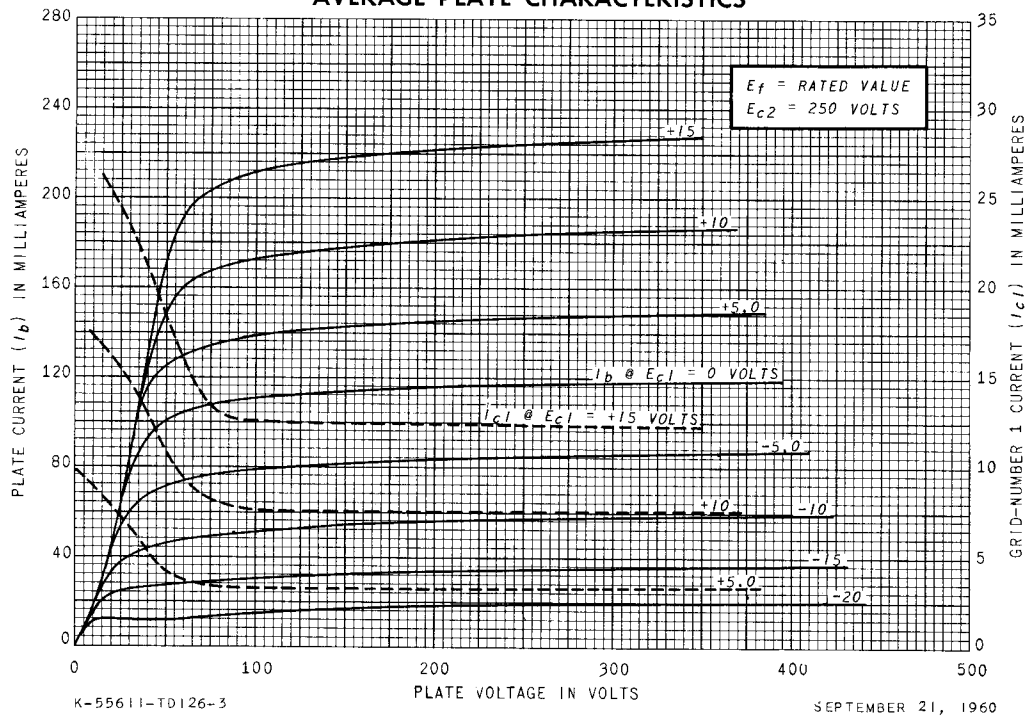
elements. In the absence of an express written agreement to the contrary, General Electric Company assumes no liability for patent infringement arising out of any use of the tubes with other devices or elements by any purchaser of tubes or others.



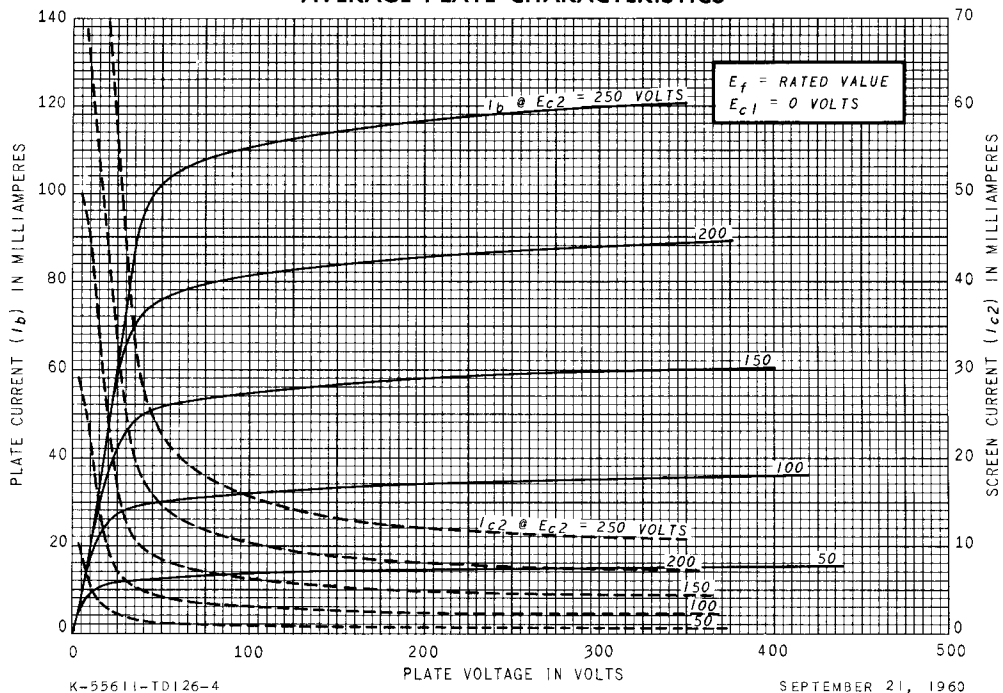
**AVERAGE PLATE CHARACTERISTICS**



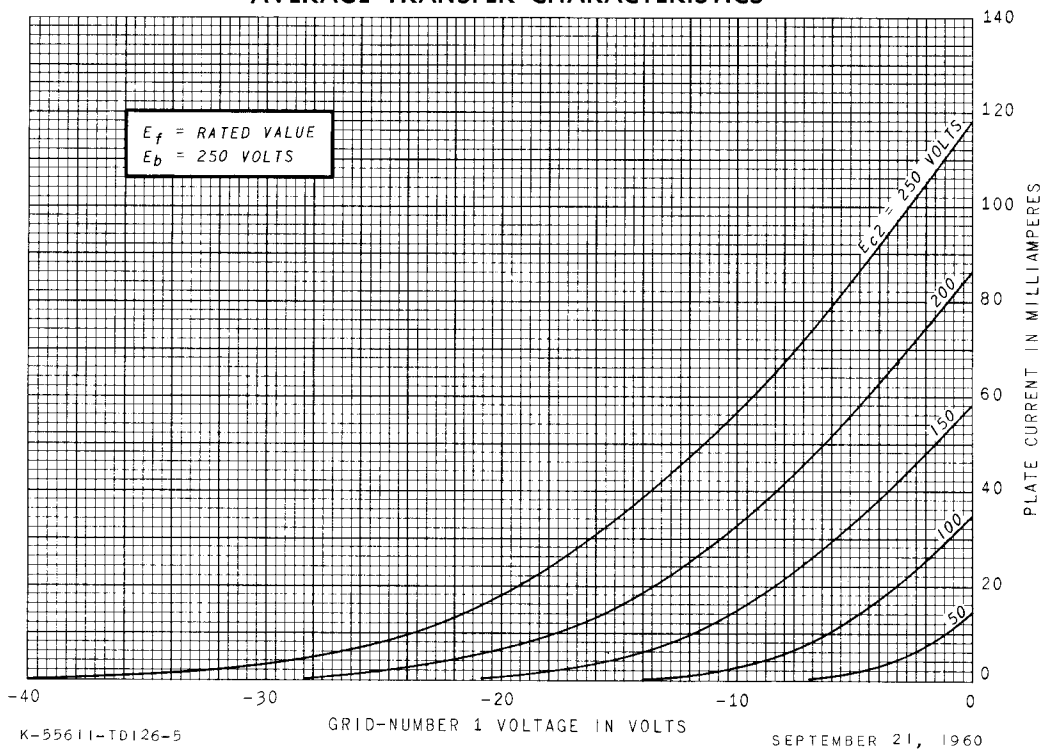
**AVERAGE PLATE CHARACTERISTICS**



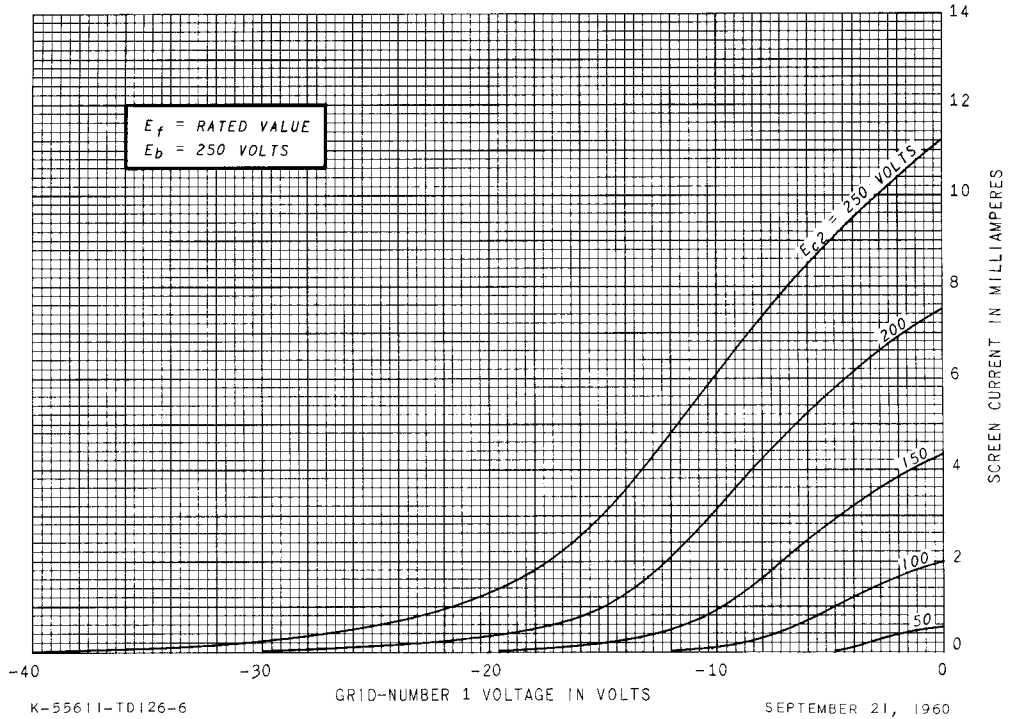
### AVERAGE PLATE CHARACTERISTICS



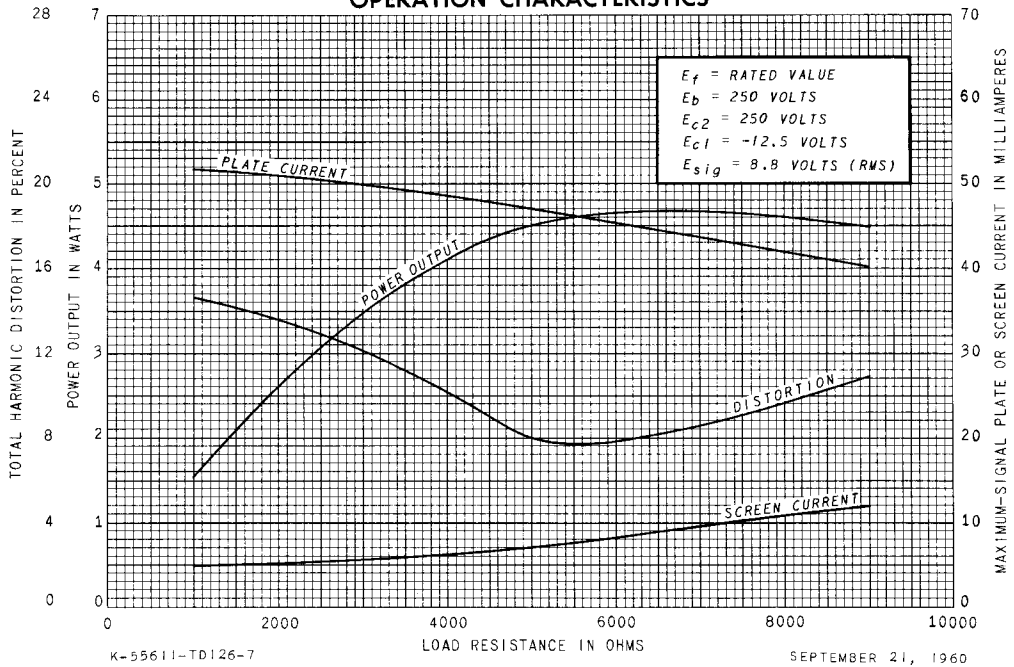
### AVERAGE TRANSFER CHARACTERISTICS



**AVERAGE TRANSFER CHARACTERISTICS**



**OPERATION CHARACTERISTICS**



RECEIVING TUBE DEPARTMENT



Owensboro, Kentucky