6AQ5-A
BEAM PENTODE

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

Cathode—Coated Unipotential

Heater Characteristics and Ratings	Series Heater Operation	Parallel Heater Operation	
Heater Voltage, AC or DC	6.3	6.3 ± 0.6†	Volts
Heater Current	0.45 ± 0.03*	0.45‡	Amperes
Heater Warm-up Time§	11	.....	Seconds

Direct Interelectrode Capacitances, approximate¶

Grid-Number 1 to Plate: (g1 to p)	0.4	pf
Input: g1 to (h+k+g2+b.p.)	8.0	pf
Output: p to (h+k+g2+b.p.)	8.5	pf

MECHANICAL

Mounting Position—Any
Envelope—T-5½, Glass
Base—E7-1, Miniature Button 7-Pin
Outline Drawing—EIA 5-3

Maximum Diameter	¾	Inches
Maximum Over-all Length	2⅝	Inches
Maximum Seated Height	2⅜	Inches

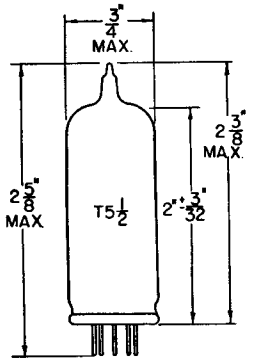
MAXIMUM RATINGS

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

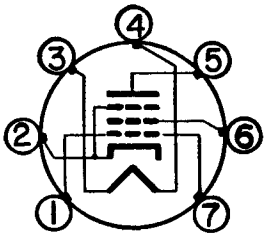


EIA 5-3

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

GENERAL ELECTRIC

Supersedes ET-T1288 dated 4-56

MAXIMUM RATINGS

DESIGN-MAXIMUM VALUES

	Class A_1 Amplifier	Vertical-Deflection Amplifier ✱ (Triode Connection) △	
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_1 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_1 AMPLIFIER, VALUES FOR TWO TUBES

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

AVERAGE CHARACTERISTICS, TRIODE CONNECTION △

Plate Voltage	250	Volts
Grid-Number 1 Voltage	−12.5	Volts
Amplification Factor	9.5	
Plate Resistance, approximate	1970	Ohms
Transconductance	4800	Micromhos
Plate Current	49.5	Milliamperes
Grid-Number 1 Voltage, approximate		
Ib = 0.5 Milliamperes	−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 Ef = 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.

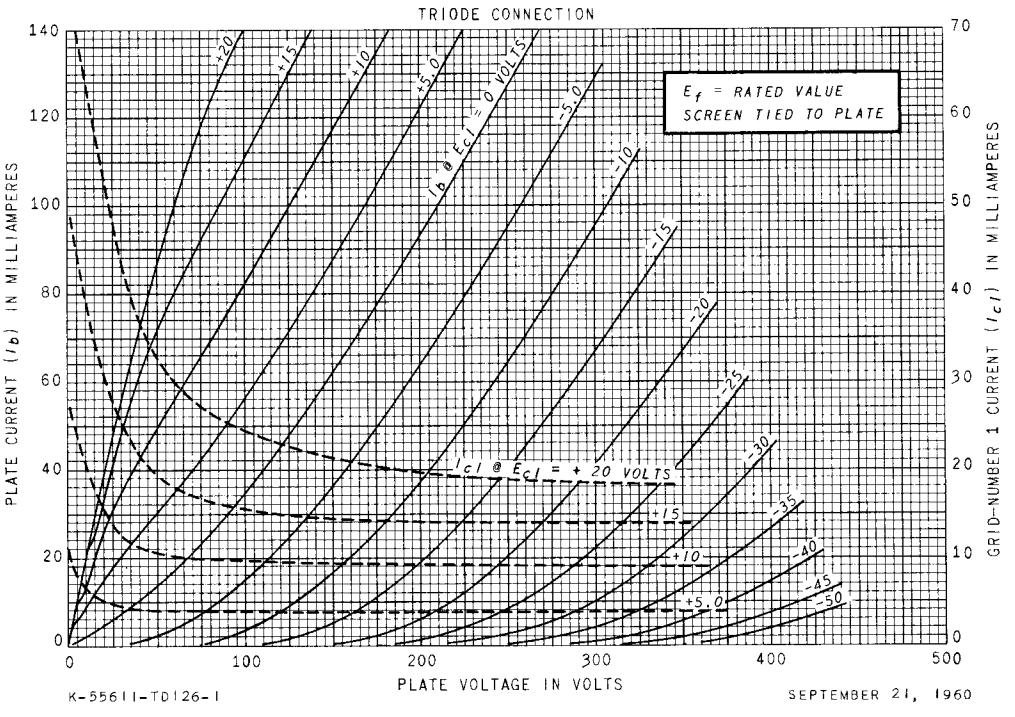
¶ Without external shield.

⁂ 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.

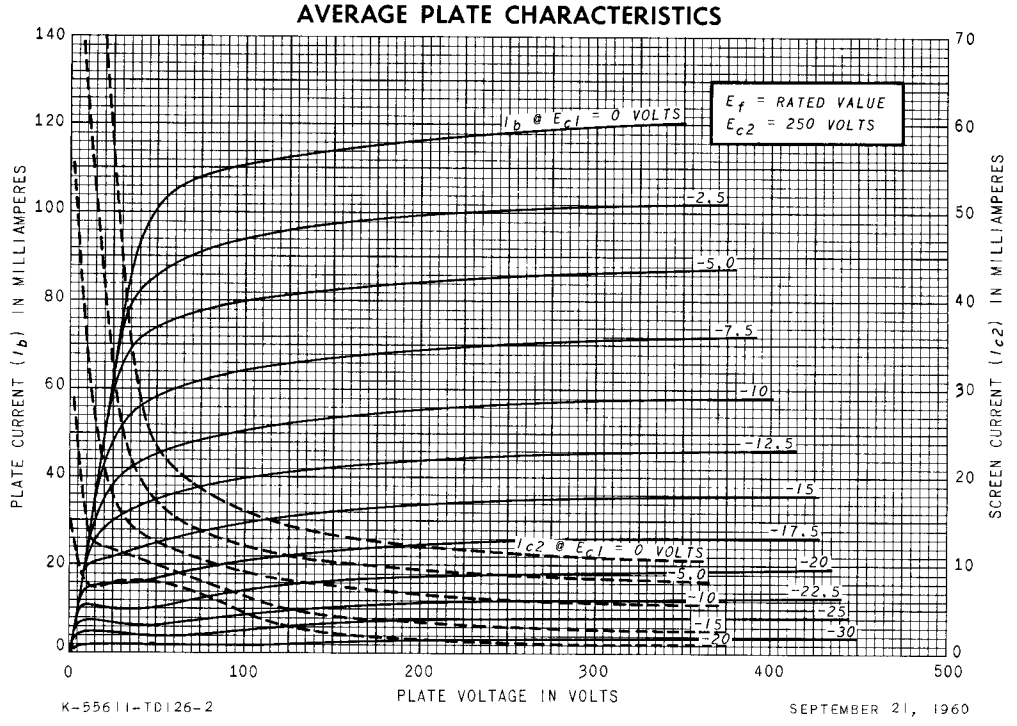
△ With screen tied to plate.

** 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.

AVERAGE PLATE CHARACTERISTICS



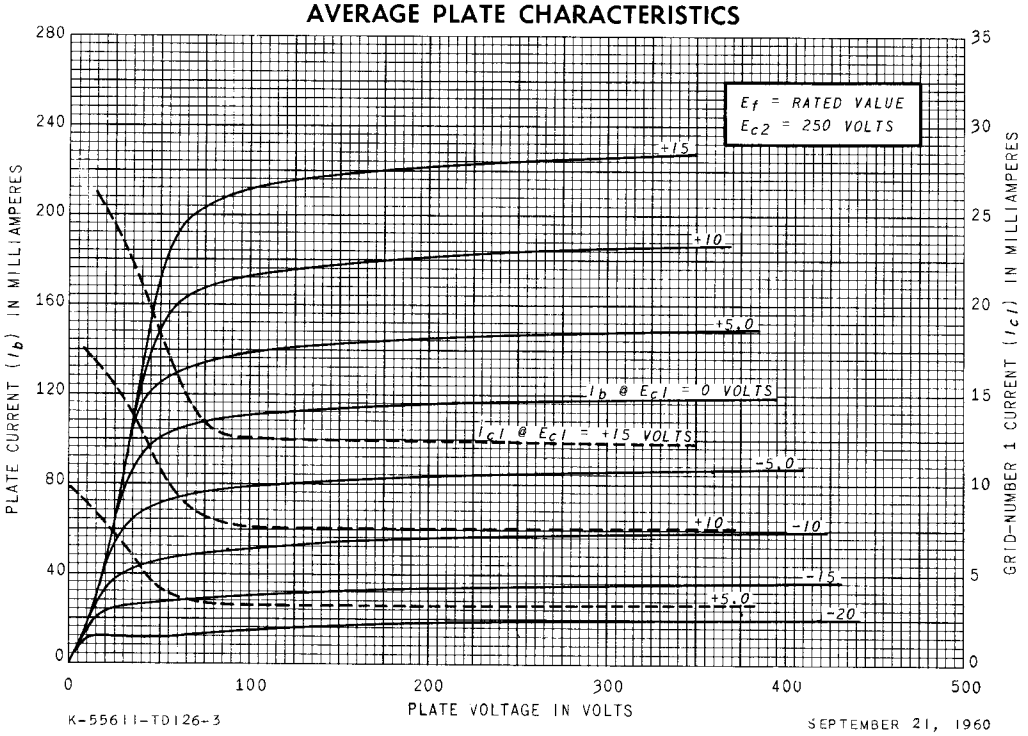
AVERAGE PLATE CHARACTERISTICS



K-5561I-TD126-2

SEPTEMBER 21, 1960

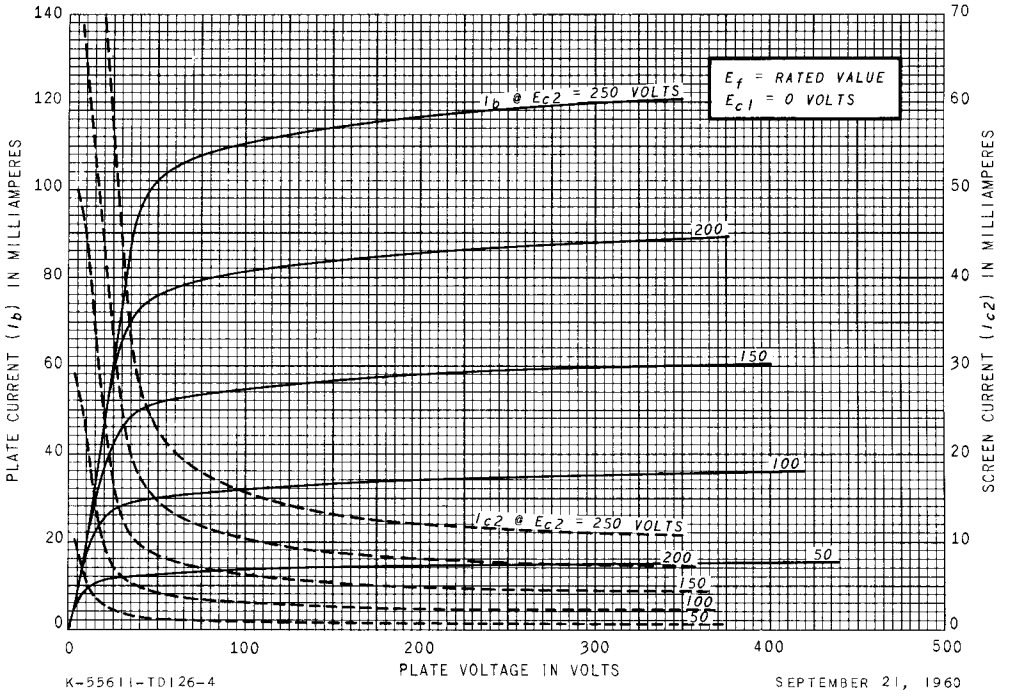
AVERAGE PLATE CHARACTERISTICS



K-5561I-TD126-3

SEPTEMBER 21, 1960

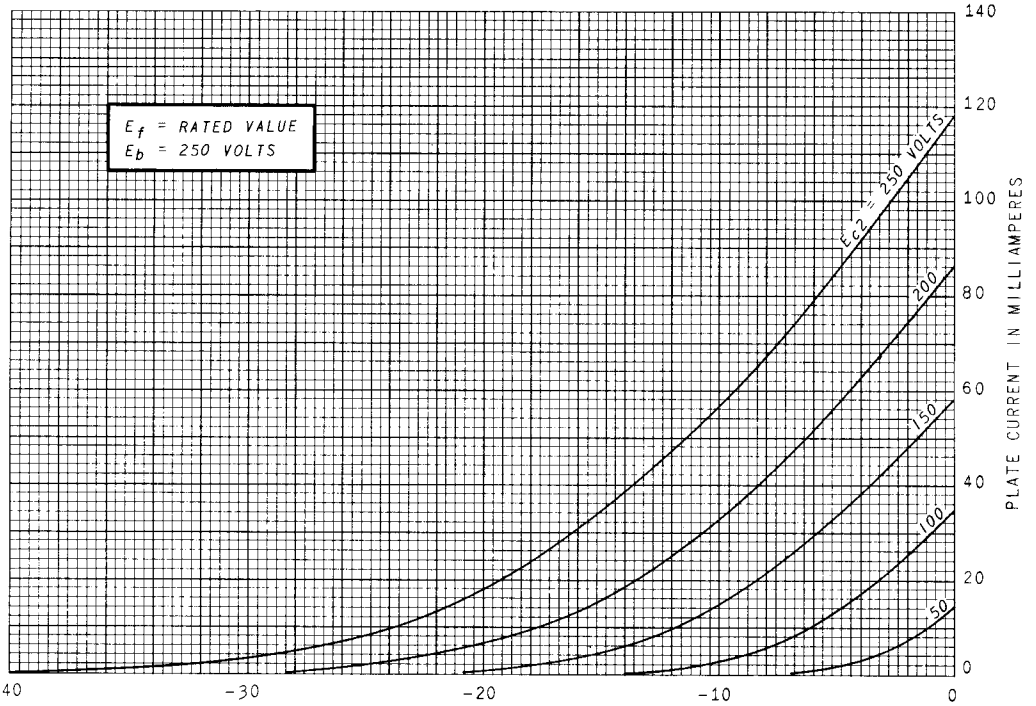
AVERAGE PLATE CHARACTERISTICS



K-55611-TD126-4

SEPTEMBER 21, 1960

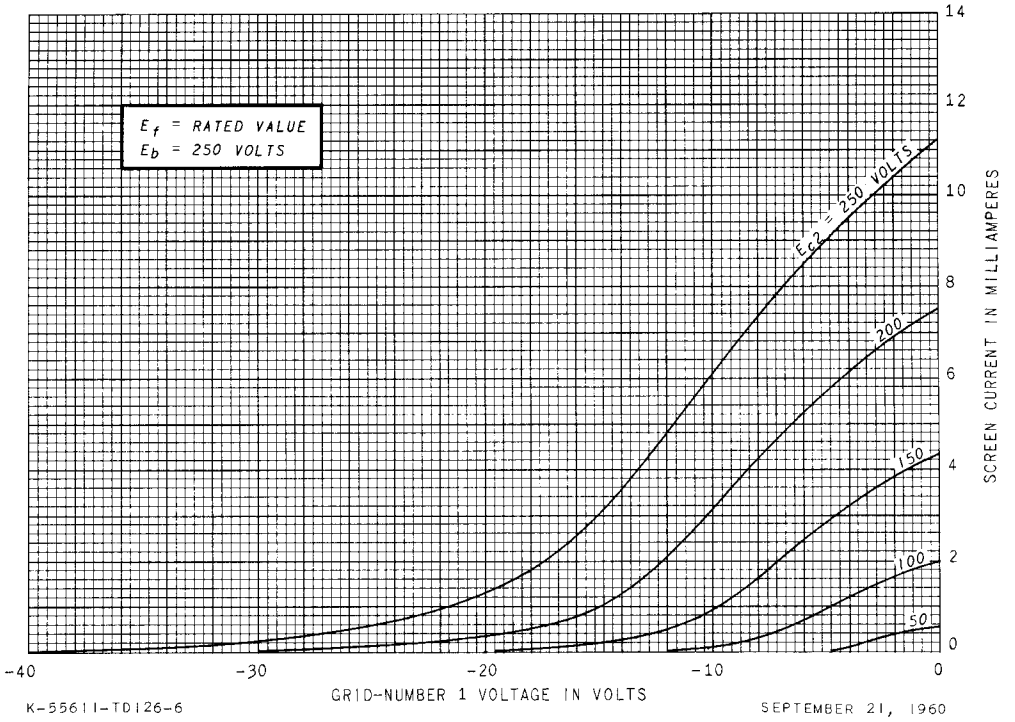
AVERAGE TRANSFER CHARACTERISTICS



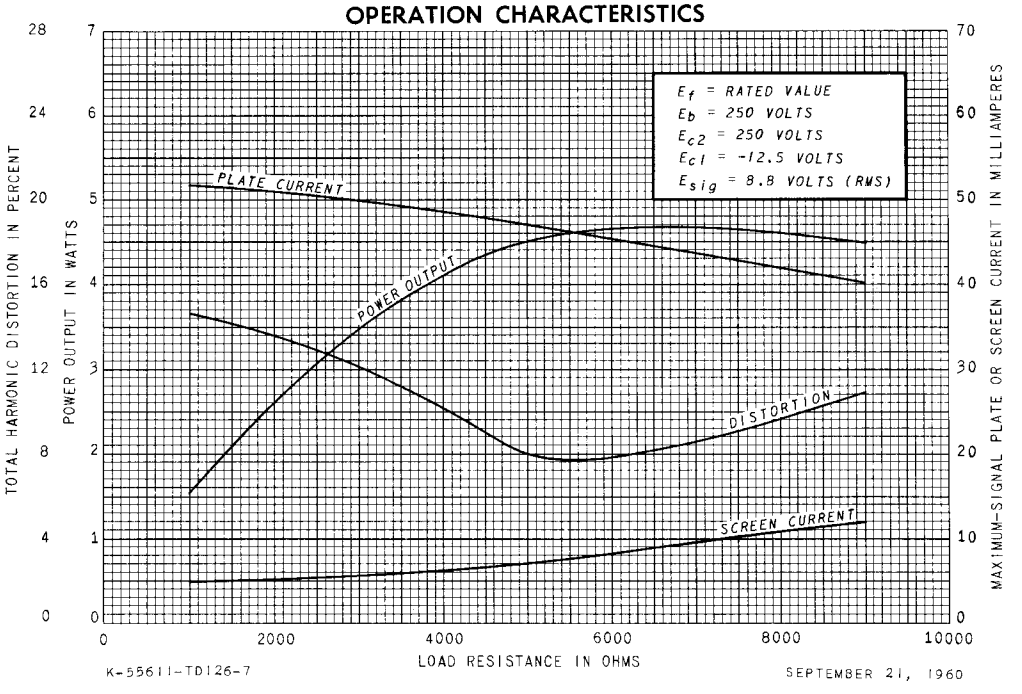
K-55611-TD126-5

SEPTEMBER 21, 1960

AVERAGE TRANSFER CHARACTERISTICS



OPERATION CHARACTERISTICS



RECEIVING TUBE DEPARTMENT

GENERAL ELECTRIC

Owensboro, Kentucky