



# 6BQ5-8BQ5

## PENTODE

FOR AF POWER AMPLIFIER APPLICATIONS

**6BQ5**  
**8BQ5**  
ET-T1535  
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### DESCRIPTION AND RATING

The 6BQ5 is a power-amplifier pentode designed for use in the audio-frequency power-output stage of television and radio receivers and in high-fidelity amplifiers.

Except for heater ratings, the 8BQ5 is identical to the 6BQ5.

#### GENERAL

##### ELECTRICAL

Cathode—Coated Unipotential	<b>6BQ5</b>	<b>8BQ5</b>	
Heater Voltage, AC or DC	6.3	8.0	Volts
Heater Current	0.76	0.6	Amperes
Heater Warm-up Time*		11	Seconds
Direct Interelectrode Capacitances†			
Grid-Number 1 to Plate, maximum		0.5	$\mu\mu\text{f}$
Input		10.8	$\mu\mu\text{f}$
Output		6.5	$\mu\mu\text{f}$

##### MECHANICAL

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

#### MAXIMUM RATINGS

##### DESIGN-CENTER VALUES

Plate Voltage	300	Volts
Screen Voltage	300	Volts
Negative DC Grid-Number 1 Voltage	100	Volts
Plate Dissipation	12	Watts
Screen Dissipation (Continuous)	2.0	Watts
Screen Dissipation (Peaks of Speech and Music)	4.0	Watts
DC Cathode Current	65	Milliamperes
Heater-Cathode Voltage		
Heater Positive with Respect to Cathode	100	Volts
Heater Negative with Respect to Cathode	100	Volts
Grid-Number 1 Circuit Resistance		
With Fixed Bias	0.3	Megohms
With Cathode Bias	1.0	Megohms

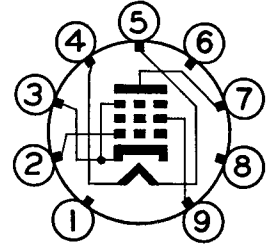
Design-center ratings are limiting values of operating conditions applicable to a bogey tube of a specified type as defined by its published data, and should not be exceeded under normal conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube in average applications, taking responsibility for normal changes in operating conditions due to rated supply voltage variation (For an AC power source, 117 volts plus or minus 10% is accepted USA practice.), equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in tube characteristics.

The equipment manufacturer should design so that initially no design-center value for the intended service is exceeded with a bogey tube in equipment operating at the stated normal supply voltage.

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

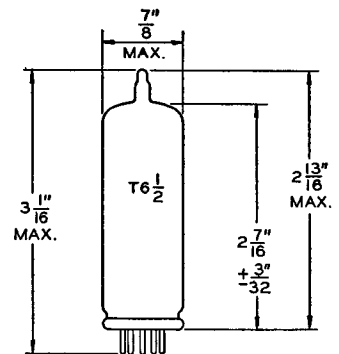


EIA 9CV

#### TERMINAL CONNECTIONS

- Pin 1—Internal Connection
- Pin 2—Grid Number 1
- Pin 3—Cathode and Grid Number 3 (Suppressor)
- Pin 4—Heater
- Pin 5—Heater
- Pin 6—Internal Connection
- Pin 7—Plate
- Pin 8—Internal Connection
- Pin 9—Grid Number 2 (Screen)

#### PHYSICAL DIMENSIONS



EIA 6-4

## CHARACTERISTICS AND TYPICAL OPERATION

### AVERAGE CHARACTERISTICS

Plate Voltage . . . . .	250	Volts
Screen Voltage . . . . .	250	Volts
Grid-Number 1 Voltage . . . . .	-7.3	Volts
Plate Resistance, approximate . . . . .	40000	Ohms
Transconductance . . . . .	11300	Micromhos
Plate Current . . . . .	.48	Milliamperes
Screen Current . . . . .	.55	Milliamperes
Amplification Factor (Grid-Number 1 to Grid-Number 2) . . . . .	19.5	

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

Plate Voltage . . . . .	250	250	250	250	Volts
Screen Voltage . . . . .	250	250	250	210	Volts
Grid-Number 1 Voltage . . . . .	-7.3	-7.3	-8.4	-6.4	Volts
Peak AF Grid-Number 1 Voltage . . . . .	6.1	6.2	4.95	4.8	Volts
Zero-Signal Plate Current . . . . .	.48	.48	.36	.36	Milliamperes
Maximum-Signal Plate Current . . . . .	.49.5	50.6	36.8	36.6	Milliamperes
Zero-Signal Screen Current . . . . .	.55	.55	4.1	3.9	Milliamperes
Maximum-Signal Screen Current . . . . .	10.8	10	8.5	7.3	Milliamperes
Load Resistance . . . . .	5200	4500	7000	7000	Ohms
Total Harmonic Distortion, approximate . . . . .	.10	.10	.10	.10	Percent
Maximum-Signal Power Output . . . . .	.57	.57	4.2	4.3	Watts

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

Plate Voltage . . . . .	250	300	Volts
Screen Voltage . . . . .	250	300	Volts
Cathode-Bias Resistor . . . . .	130	130	Ohms
Peak AF Grid-to-Grid Voltage . . . . .	22.6	28.2	Volts
Zero-Signal Plate Current . . . . .	.62	.72	Milliamperes
Maximum-Signal Plate Current . . . . .	.75	.92	Milliamperes
Zero-Signal Screen Current . . . . .	.70	8.0	Milliamperes
Maximum-Signal Screen Current . . . . .	.15	22	Milliamperes
Effective Load Resistance, Plate-to-Plate . . . . .	8000	8000	Ohms
Total Harmonic Distortion . . . . .	.3	4	Percent
Maximum-Signal Power Output . . . . .	.11	17	Watts

### PUSH-PULL CLASS B AMPLIFIER, VALUES FOR TWO TUBES

Plate Voltage . . . . .	250	300	Volts
Screen Voltage . . . . .	250	300	Volts
Grid-Number 1 Voltage . . . . .	-11.6	-14.7	Volts
Peak AF Grid-to-Grid Voltage . . . . .	22.6	28.2	Volts
Zero-Signal Plate Current . . . . .	.20	.15	Milliamperes
Maximum-Signal Plate Current . . . . .	.75	.92	Milliamperes
Zero-Signal Screen Current . . . . .	2.2	1.6	Milliamperes
Maximum-Signal Screen Current . . . . .	.15	22	Milliamperes
Effective Load Resistance, Plate-to-Plate . . . . .	8000	8000	Ohms
Total Harmonic Distortion . . . . .	.3	4	Percent
Maximum-Signal Power Output . . . . .	.11	17	Watts

### CLASS A<sub>1</sub> AMPLIFIER, TRIODE CONNECTION‡

Plate Voltage . . . . .	250	Volts
Cathode-Bias Resistor . . . . .	270	Ohms
Peak AF Grid-Number 1 Voltage . . . . .	9.5	Volts
Zero-Signal Plate Current . . . . .	.34	Milliamperes
Maximum-Signal Plate Current . . . . .	.36	Milliamperes
Load Resistance . . . . .	3500	Ohms
Total Harmonic Distortion, approximate . . . . .	.9	Percent
Maximum-Signal Power Output . . . . .	1.95	Watts

**CHARACTERISTICS AND TYPICAL OPERATION (Continued)**

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

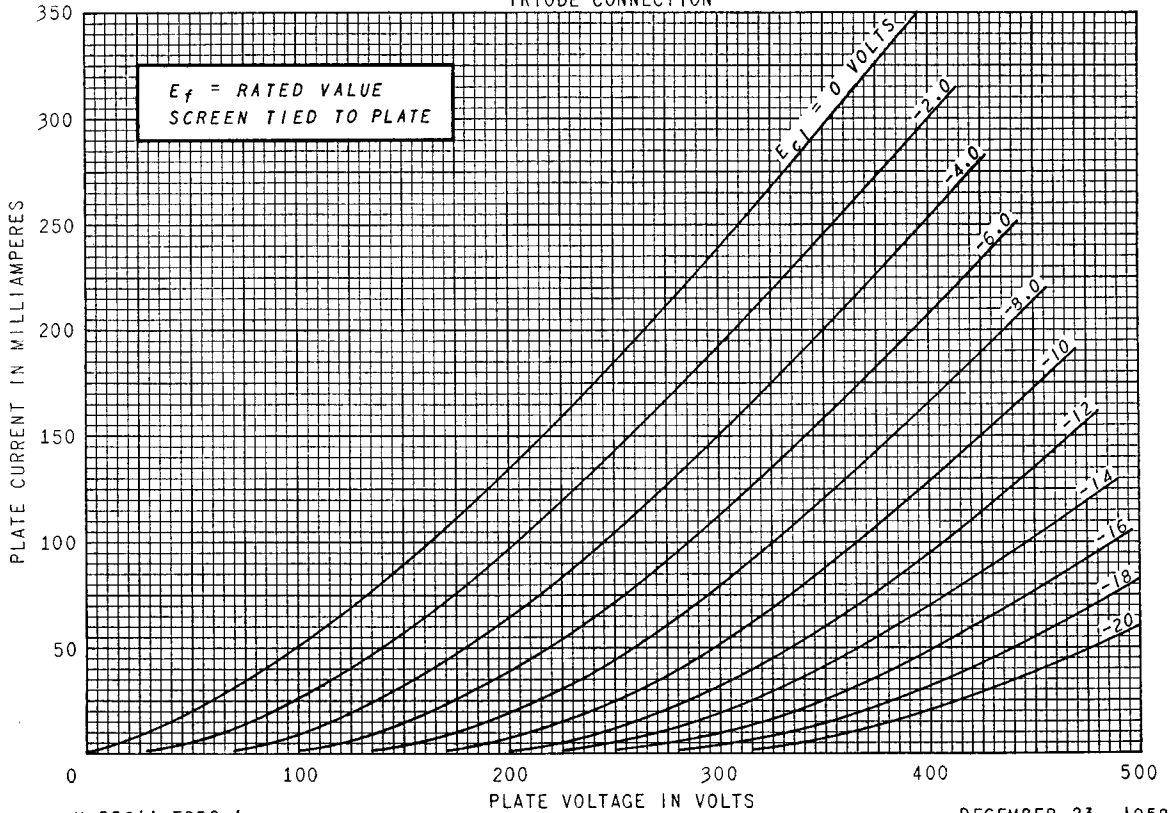
Plate Voltage . . . . .	250	300	Volts
Cathode-Bias Resistor . . . . .	270	270	Ohms
Peak AF Grid-to-Grid Voltage . . . . .	23.4	28.2	Volts
Zero-Signal Plate Current . . . . .	.40	48	Milliamperes
Maximum-Signal Plate Current . . . . .	43.4	52	Milliamperes
Effective Load Resistance, Plate-to-Plate . . . . .	10000	10000	Ohms
Total Harmonic Distortion . . . . .	2.5	2.5	Percent
Maximum-Signal Power Output . . . . .	3.4	5.2	Watts

\* 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.

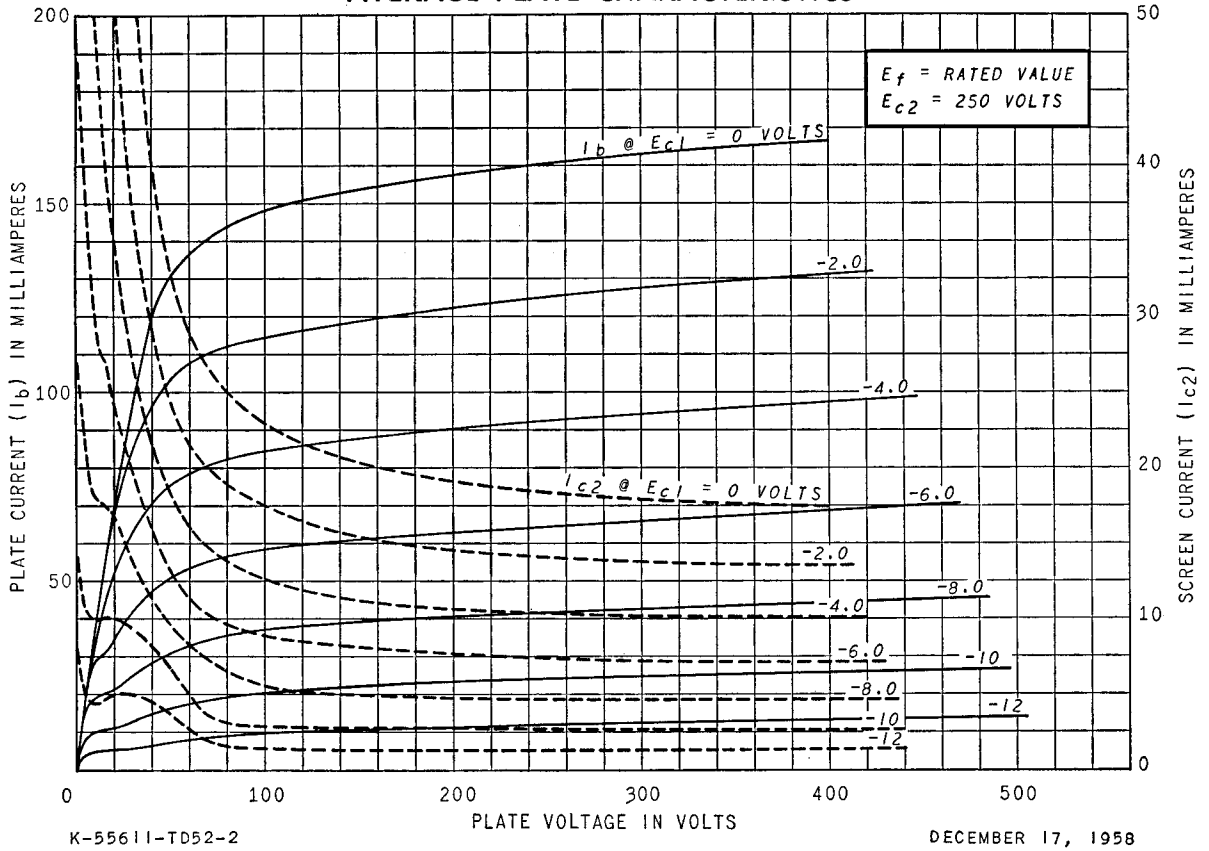
† Without external shield.

‡ With screen tied to plate.

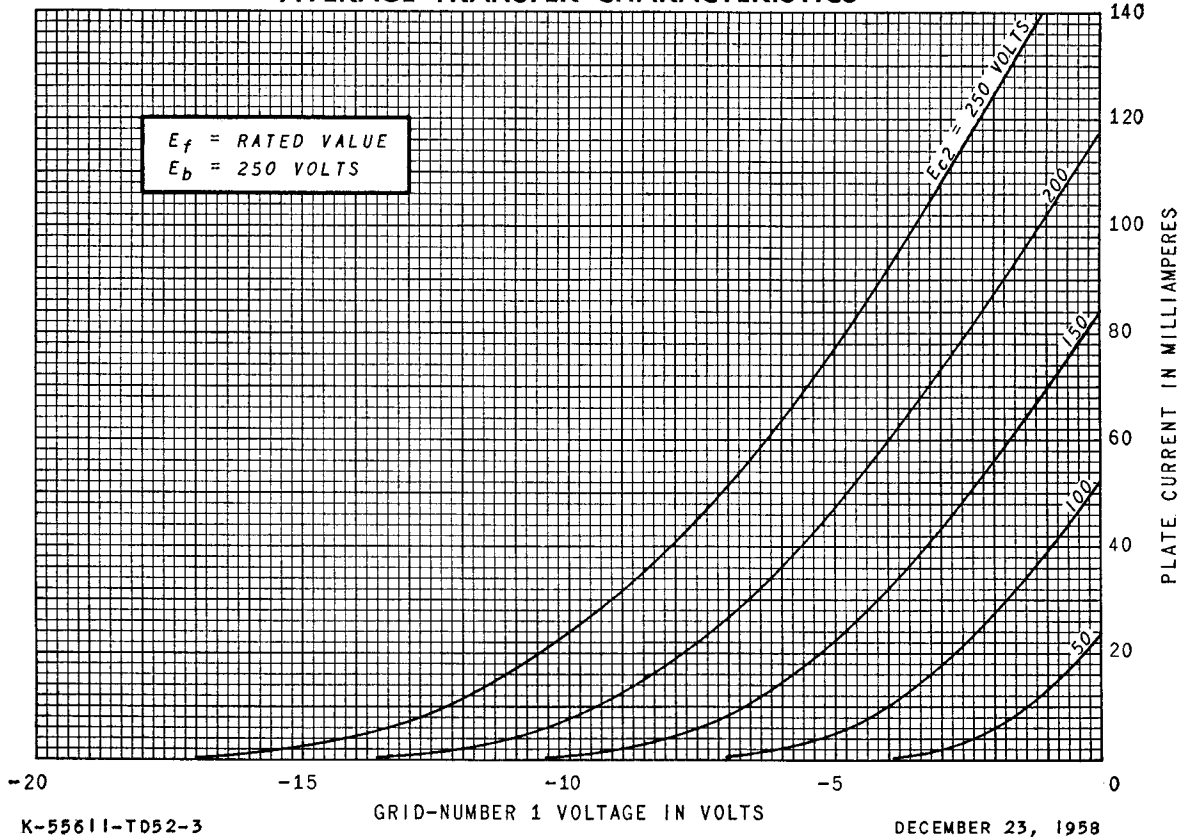
**AVERAGE PLATE CHARACTERISTICS**  
 TRIODE CONNECTION



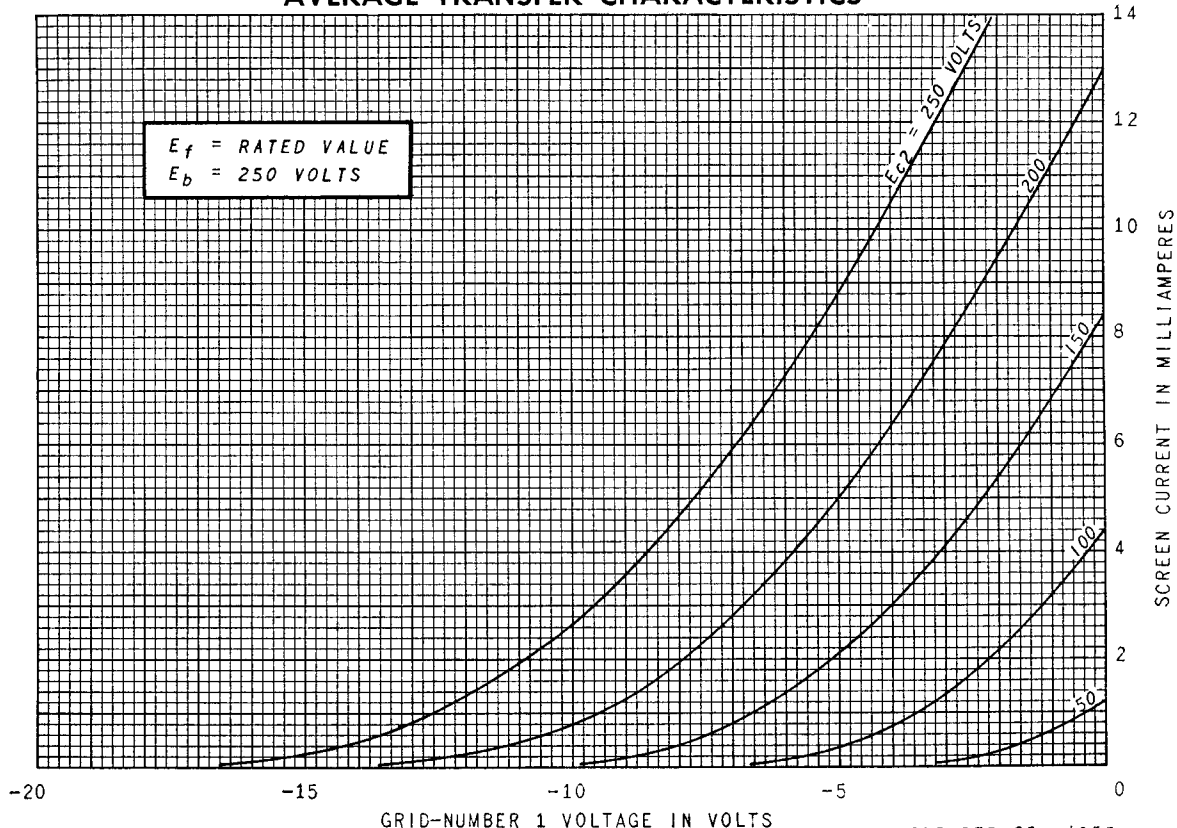
### AVERAGE PLATE CHARACTERISTICS



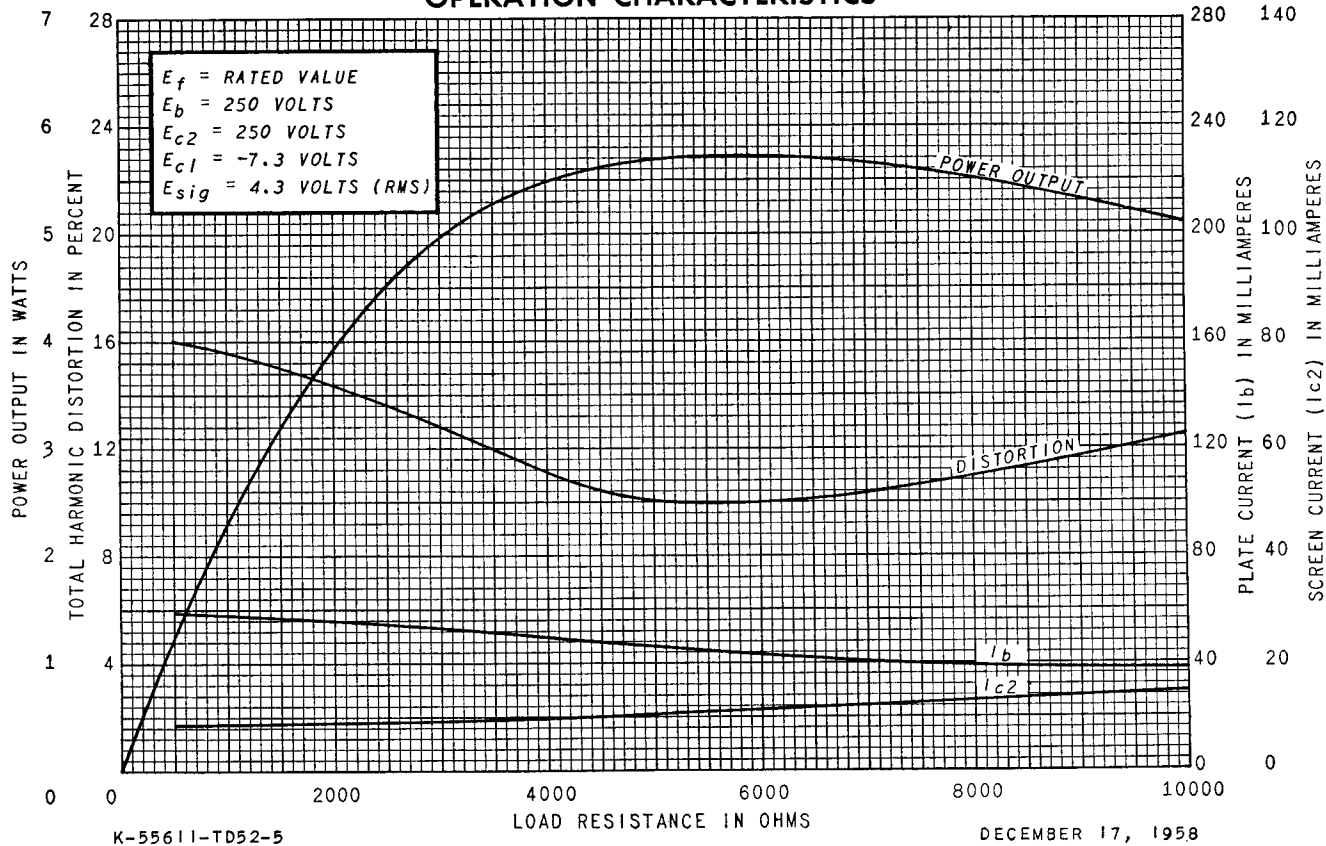
### AVERAGE TRANSFER CHARACTERISTICS



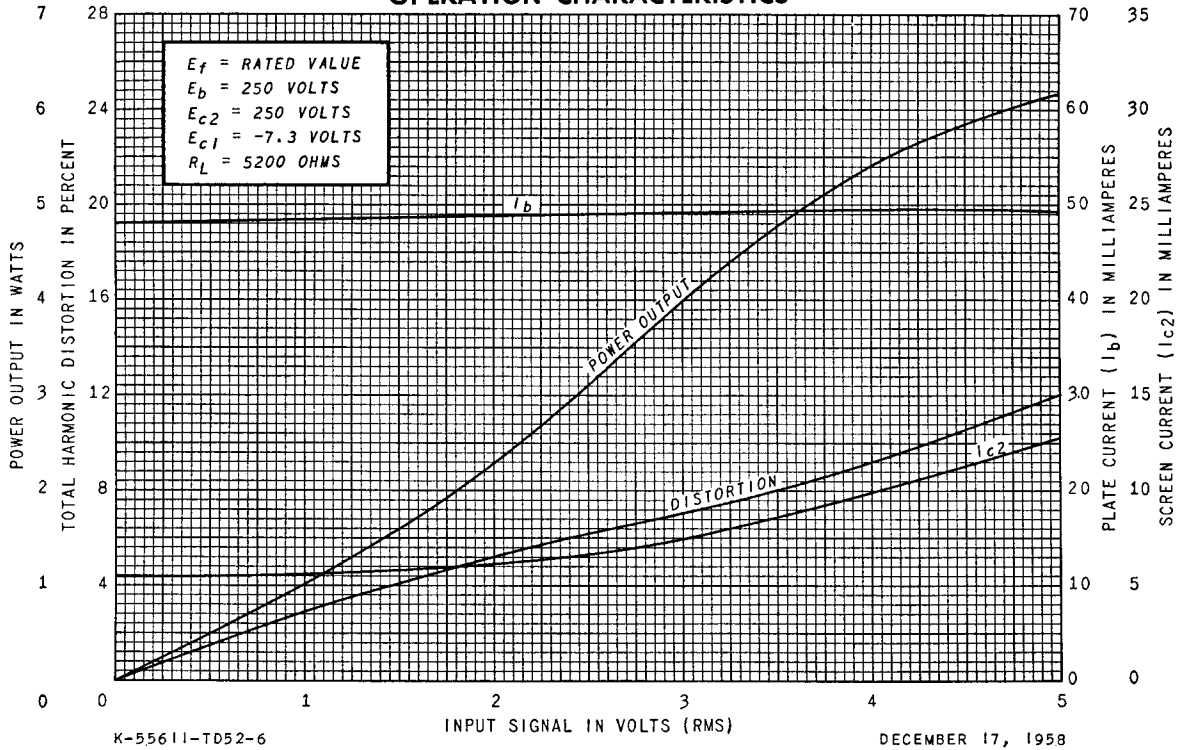
### AVERAGE TRANSFER CHARACTERISTICS



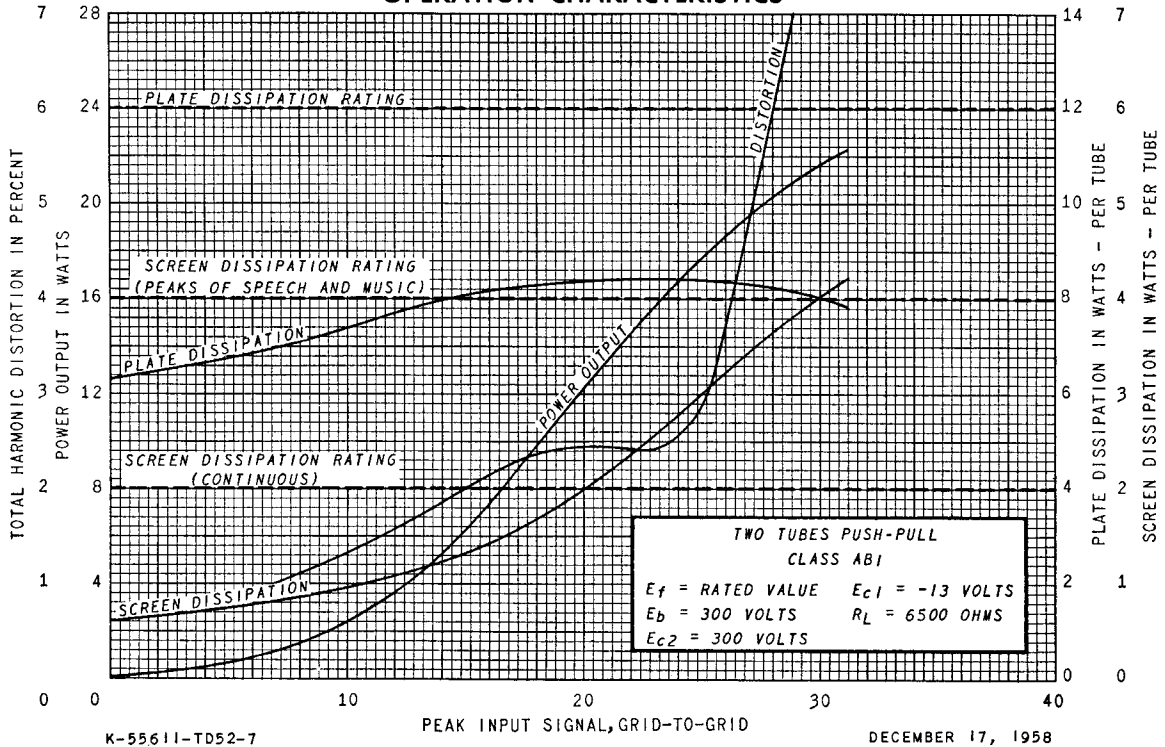
### OPERATION CHARACTERISTICS



**OPERATION CHARACTERISTICS**



**OPERATION CHARACTERISTICS**



**ELECTRONIC COMPONENTS DIVISION**



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