



7189-A

PENTODE

FOR AF POWER AMPLIFIER APPLICATIONS

7189AGE0

7189-A
ET-T1522A

Page 1
11-59

DESCRIPTION AND RATING

The 7189-A is a power-amplifier pentode designed for use in the audio-frequency power output stage of television and radio receivers and high-fidelity amplifiers.

The 7189-A is unilaterally interchangeable, both electrically and mechanically, with the 7189. It differs from the 7189 in having a higher screen-voltage rating and in specifying the internal connections to pins 1 and 6.

GENERAL

ELECTRICAL

Cathode—Coated Unipotential	
Heater Voltage, AC or DC	6.3 ± 10% Volts
Heater Current	0.76 Amperes
Direct Interelectrode Capacitances*	
Grid-Number 1 to Plate	0.5 μμf
Input	10.8 μμf
Output	6.5 μμf

MECHANICAL

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

MAXIMUM RATINGS

DESIGN-MAXIMUM VALUES

Plate Voltage	440 Volts
Screen Voltage	400† Volts
Plate Dissipation	13.2 Watts
Screen Dissipation	2.2‡ Watts
DC Cathode Current	72 Milliampères
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

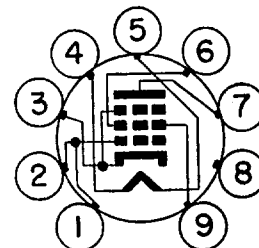
Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey tube of a specified type as defined by its published data, and should not be exceeded under the worst probable conditions.

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

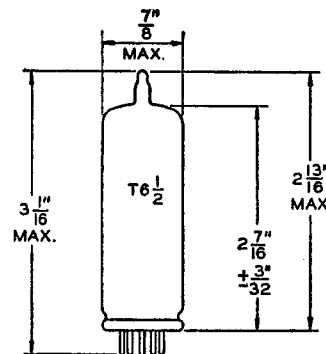


EIA 9LE

TERMINAL CONNECTIONS

- Pin 1—Grid Number 1
- Pin 2—Grid Number 1
- Pin 3—Cathode and Grid Number 3 (Suppressor)
- Pin 4—Heater
- Pin 5—Heater
- Pin 6—Grid Number 2 (Screen)
- Pin 7—Plate
- Pin 8—Internal Connection—Do Not Use
- Pin 9—Grid Number 2 (Screen)

PHYSICAL DIMENSIONS



EIA 6-4



Supersedes ET-T1522, dated 3-59

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.....	5.5	Milliamperes
Amplification Factor (Grid-Number 1 to Grid-Number 2).....	19.5	

CLASS A₁ 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.....	5.5	5.5	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.....	5.7	5.7	4.2	4.3	Watts

PUSH-PULL CLASS AB₁ AMPLIFIER, VALUES FOR TWO TUBES

Plate Voltage.....	250	300	400	Volts
Screen Voltage.....	250	300	300	Volts
Cathode-Bias Resistor.....	130	130	Ohms
Grid-Number 1 Voltage.....	-15	Volts
Peak AF Grid-to-Grid Voltage.....	22.6	28.2	30	Volts
Zero-Signal Plate Current.....	62	72	15	Milliamperes
Maximum-Signal Plate Current.....	75	92	105	Milliamperes
Zero-Signal Screen Current.....	7.0	8.0	1.6	Milliamperes
Maximum-Signal Screen Current.....	15	22	25	Milliamperes
Effective Load Resistance, Plate-to-Plate.....	8000	8000	8000	Ohms
Total Harmonic Distortion.....	3	4	4	Percent
Maximum-Signal Power Output.....	11	17	24	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 A₁ 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

PUSH-PULL CLASS AB₁ 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

* Without external shield.

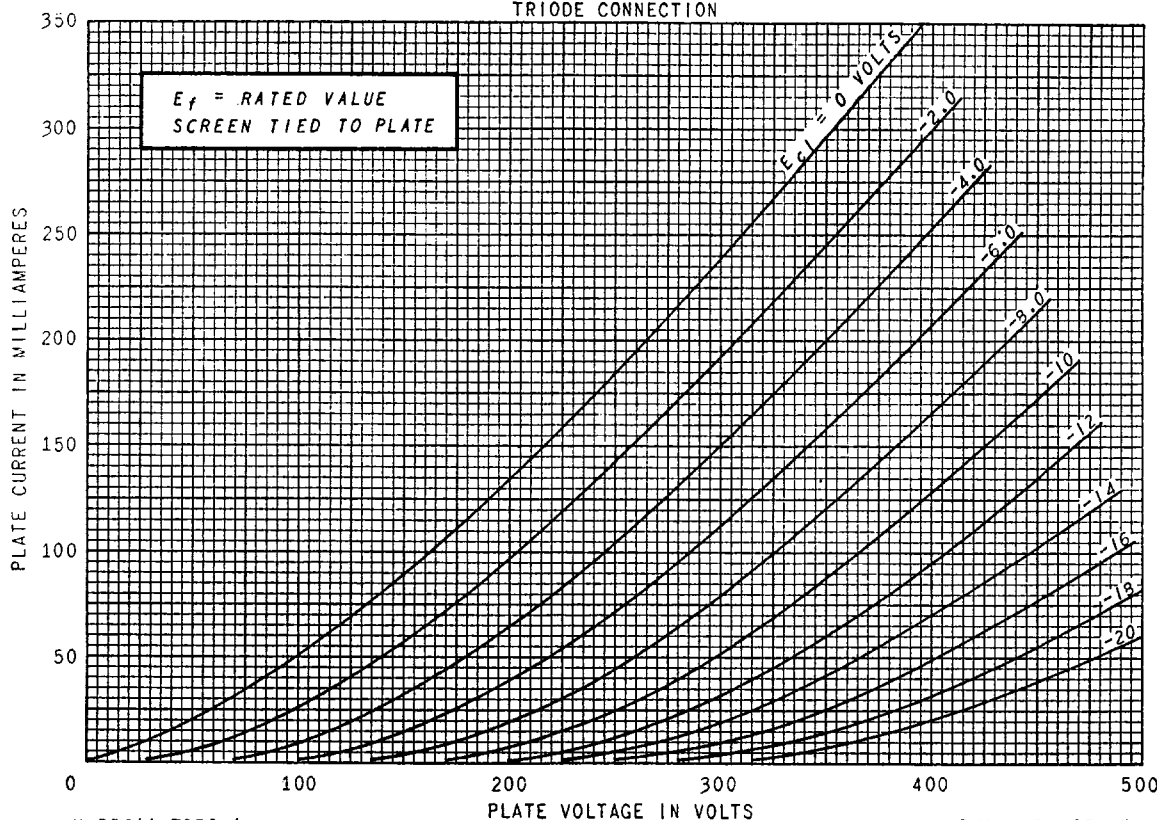
† The Design-Maximum screen voltage rating is 415 volts in push-pull circuits where the screen of each tube is connected to a tap on the plate winding of the output transformer.

‡ Screen dissipation may reach 4.4 watts during periods of maximum input of speech and music signals, under worst probable operating conditions as specified for the Design-Maximum rating system.

§ With screen tied to plate.

AVERAGE PLATE CHARACTERISTICS

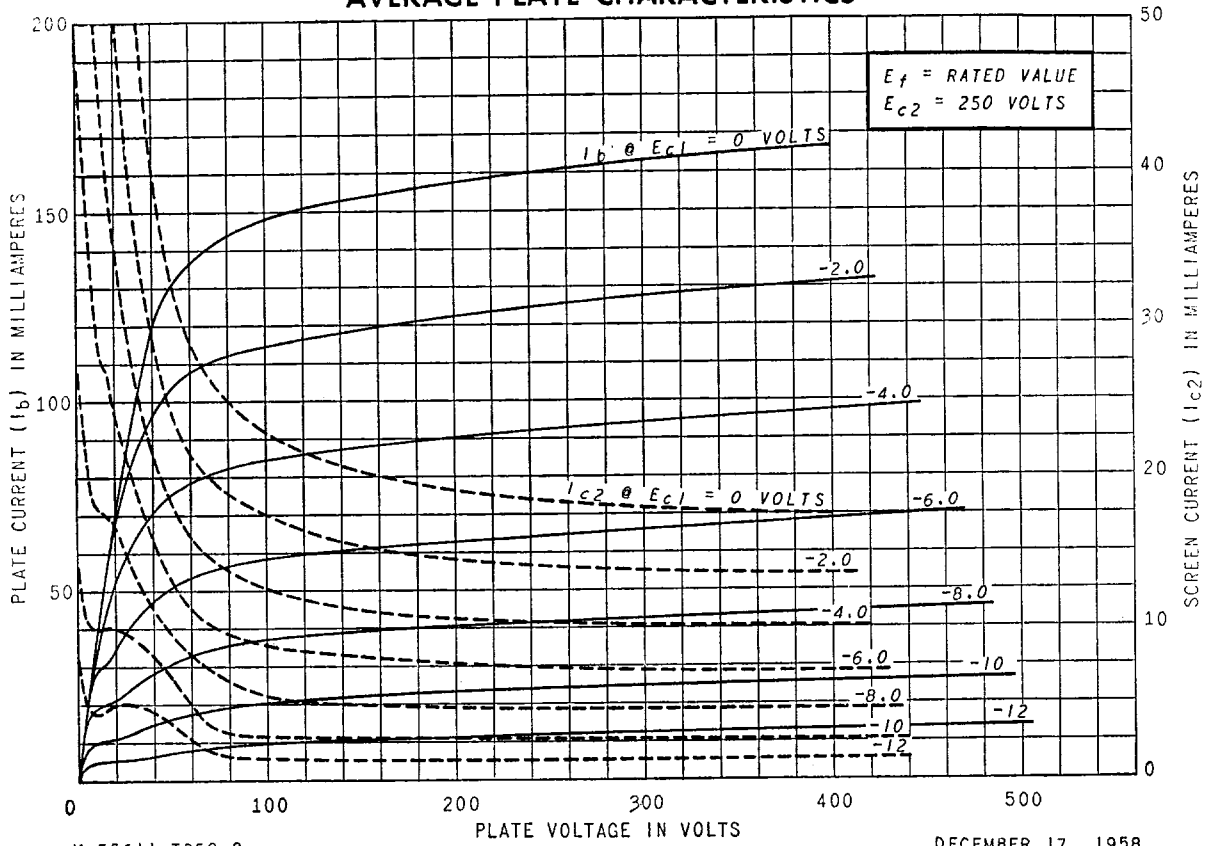
TRIODE CONNECTION



K-55611-TD52-1

DECEMBER 23, 1958

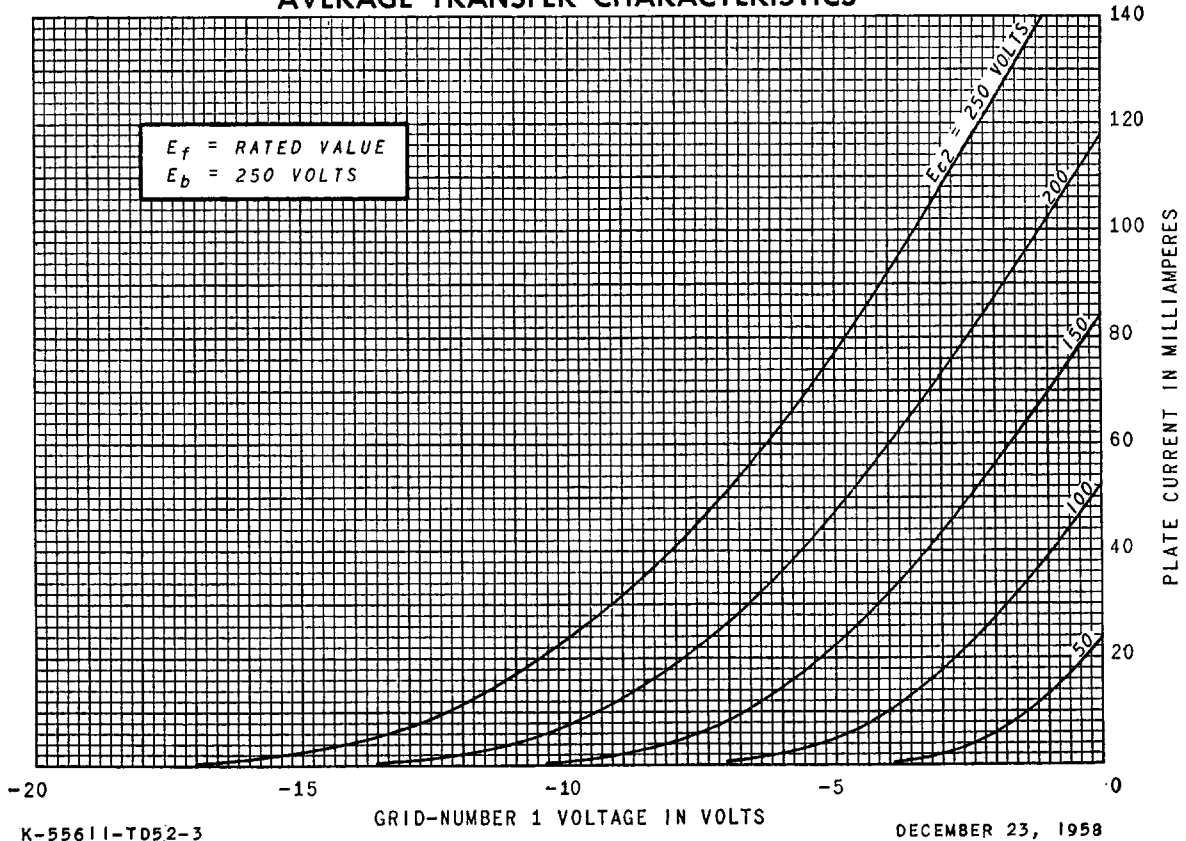
AVERAGE PLATE CHARACTERISTICS



K-55611-TD52-2

DECEMBER 17, 1958

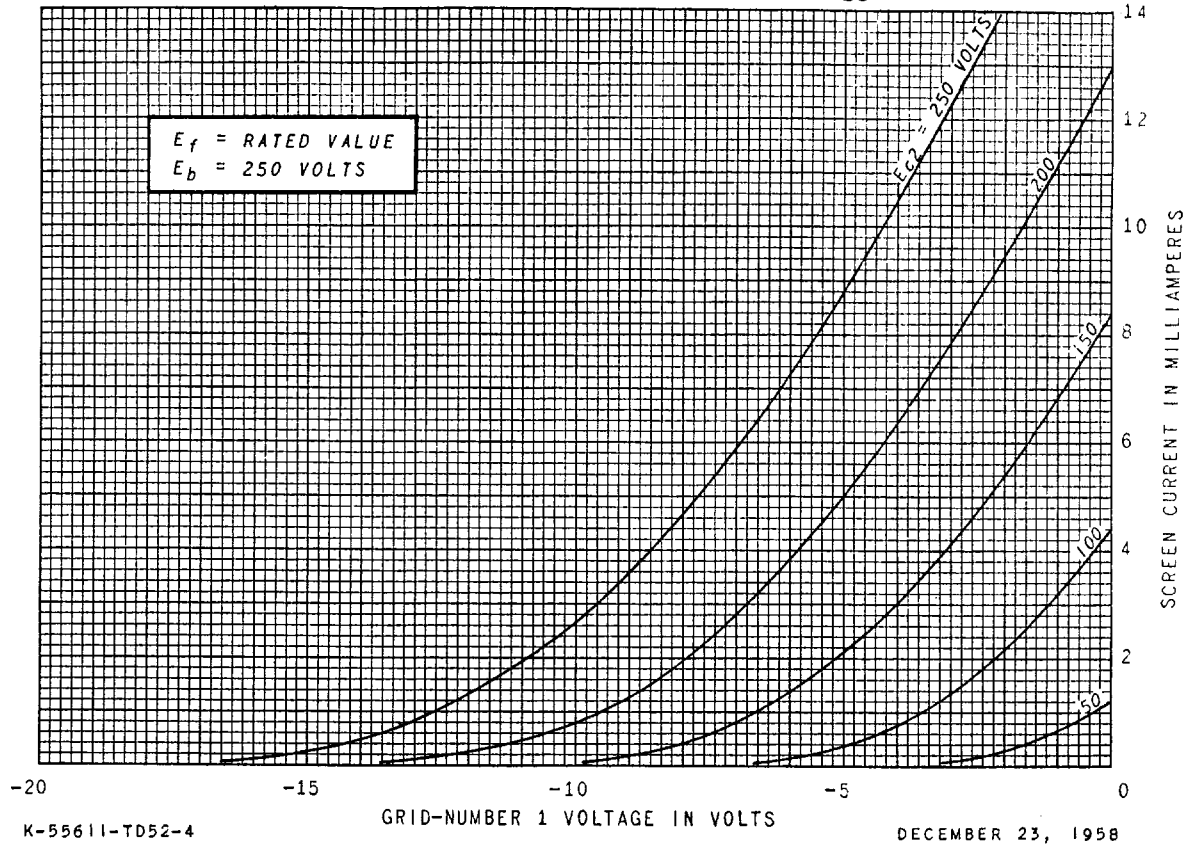
AVERAGE TRANSFER CHARACTERISTICS



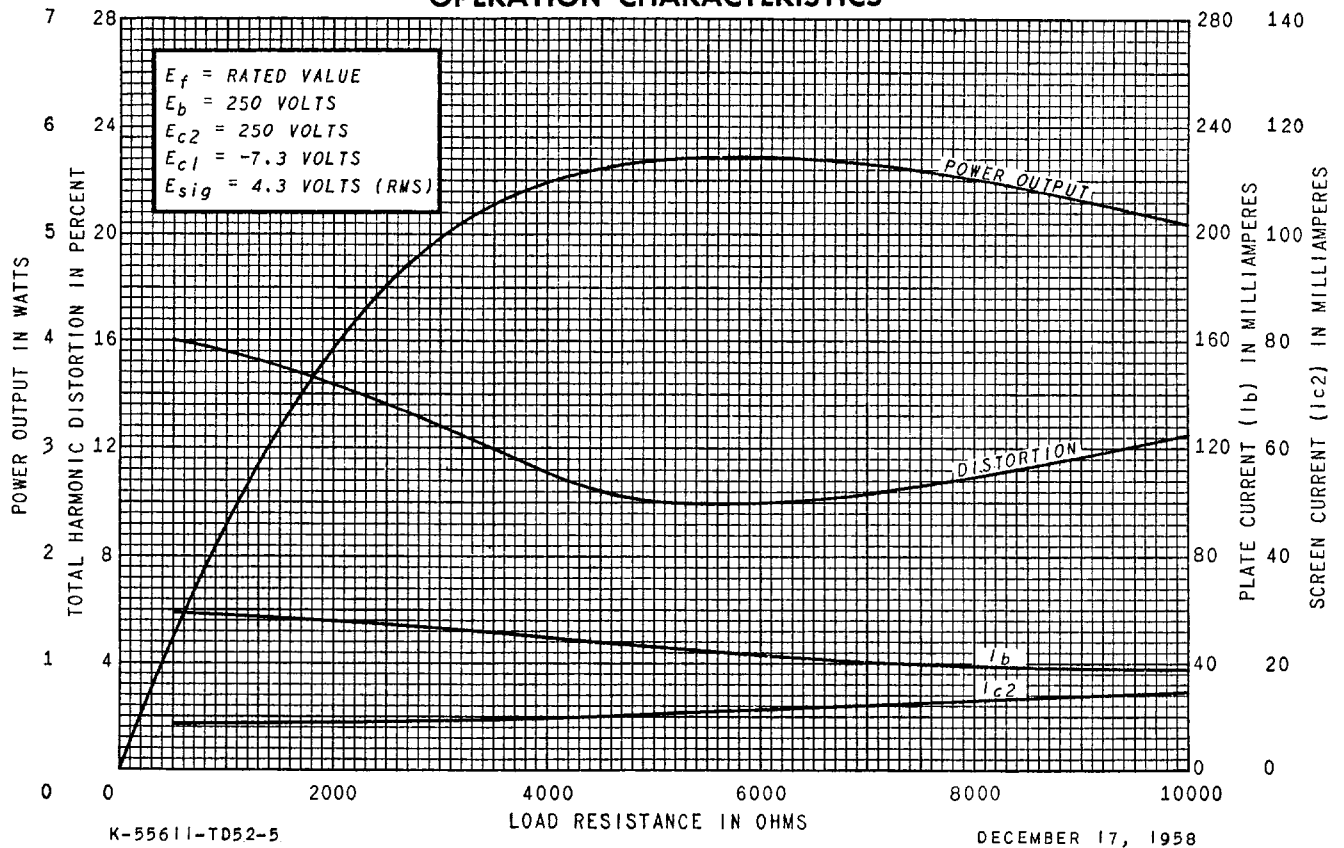
K-55611-TD52-3

DECEMBER 23, 1958

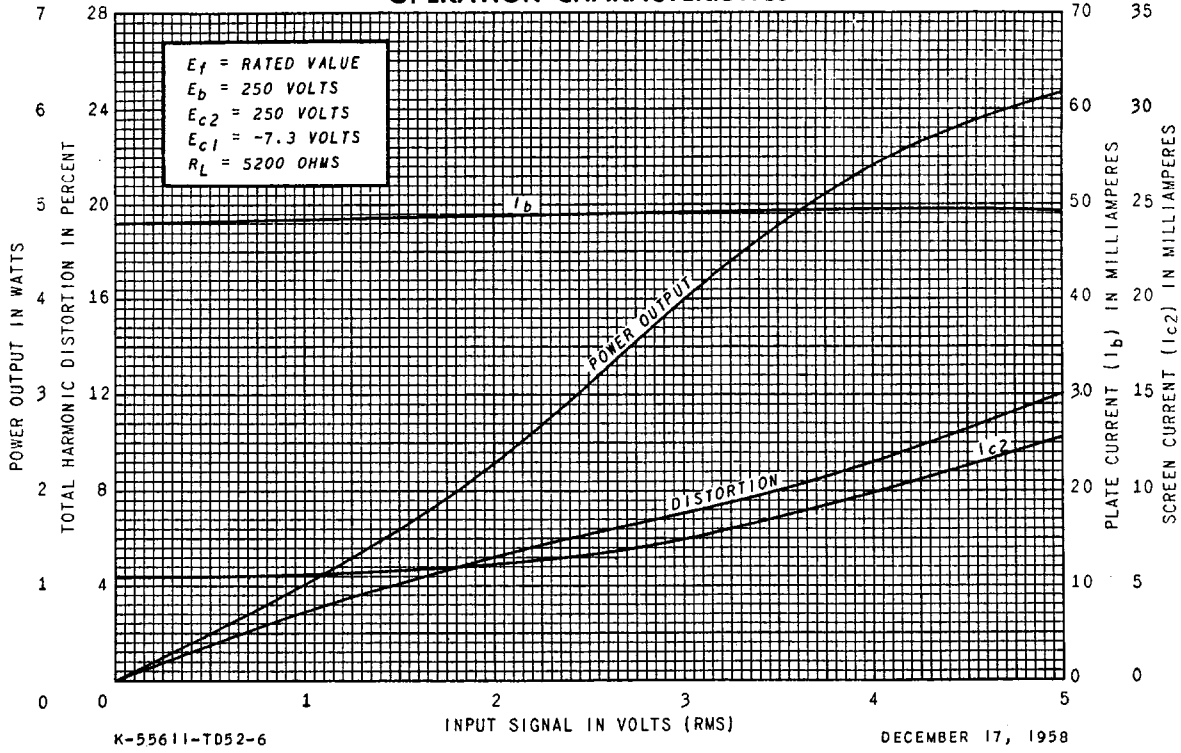
AVERAGE TRANSFER CHARACTERISTICS



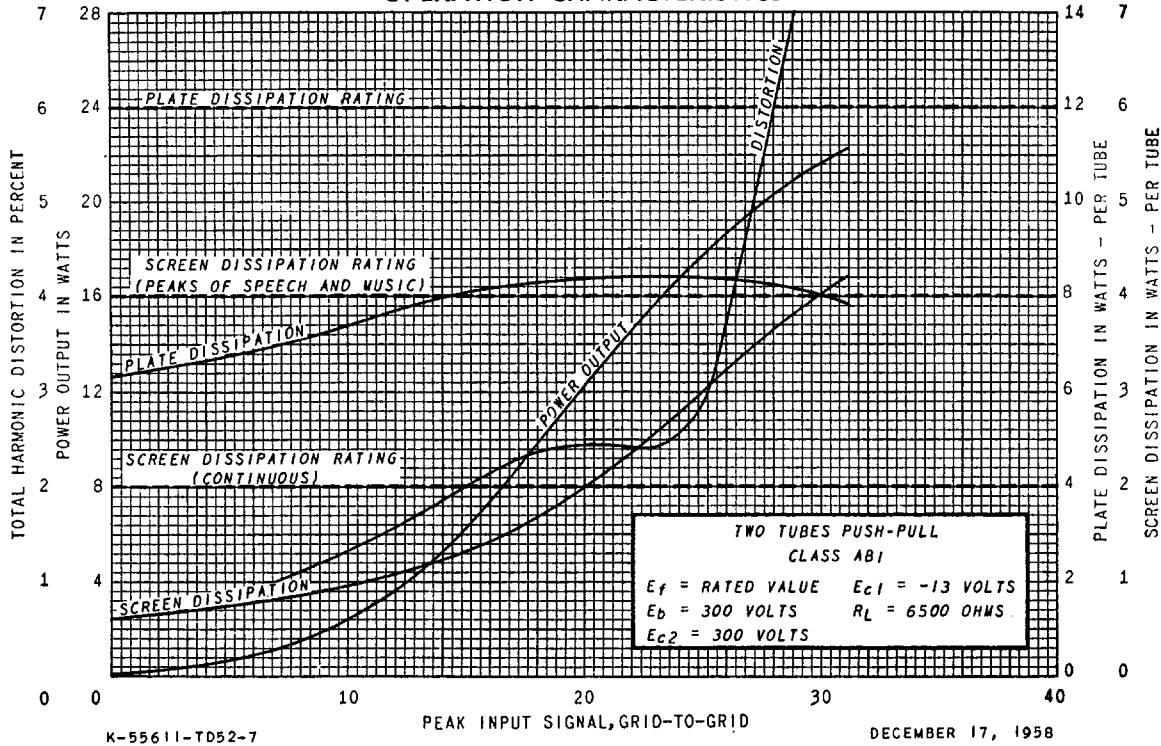
OPERATION CHARACTERISTICS



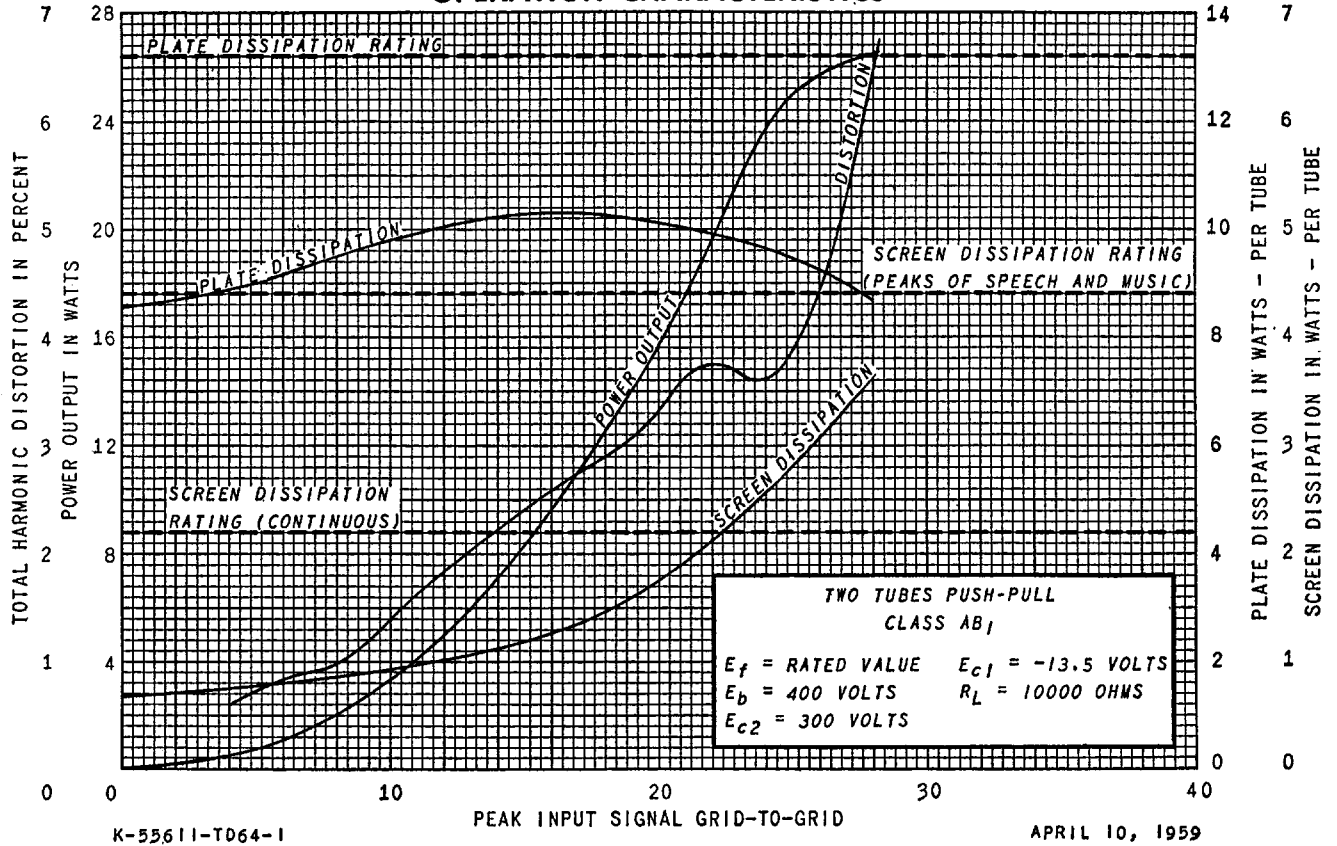
OPERATION CHARACTERISTICS



OPERATION CHARACTERISTICS



OPERATION CHARACTERISTICS



K-55611-T064-1

APRIL 10, 1959