

November 10, 1954

Beam Power Amplifier Type 12BK5

The 12BK5 is a 9-pin miniature beam power amplifier designed for service in the power output stages of television and radio receivers. The 12BK5 can also be used as a video amplifier. The tube features high power sensitivity, high transconductance, and high plate efficiency. Except for heater ratings the 12BK5 is identical with the 6BK5.

The 12BK5 has been designed for use in receivers which employ series-connected heaters, especially in television receivers where the picture-tube heater is in series with other heaters. When it is employed in this type of circuit with other tubes having a heater current rating of 600 ma., heater voltage surges across individual tubes are minimized inasmuch as the heater warm-up characteristic is controlled.

GENERAL DATA

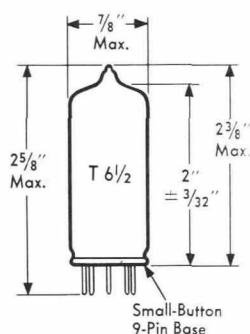
Electrical:

Cathode	Coated Unipotential
Filament	
Voltage	12.6 ac or dc Volts
Current	0.6 Ampere
Warm-up Time (Approx.)*	10.5 Seconds
Direct Interelectrode Capacitances (Unshielded):	
Grid 1 to Plate	0.6 $\mu\mu\text{f}$
Input	13 $\mu\mu\text{f}$
Output	5.0 $\mu\mu\text{f}$

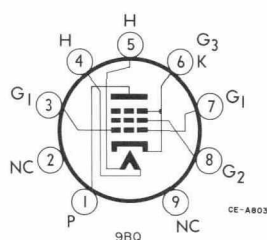
Mechanical:

Bulb	T-6 $\frac{1}{2}$
Base	E9-1, Small Button 9-Pin
Basing	9BQ
Mounting Position	Any

* See Page 4



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MAXIMUM RATINGS

Design Center Values

Plate Voltage	250 max.	Volts
Grid 2 Voltage	250 max.	Volts
Positive Grid 1 Voltage	0 max.	Volts
Plate Dissipation	9 max.	Watts
Screen Dissipation	2.5 max.	Watts
Heater-Cathode Voltage:		
Heater Negative with Respect to Cathode		
Total DC + Peak	200 max.	Volts
Heater Positive with Respect to Cathode		
DC Component	100 max.	Volts
Total DC + Peak	200 max.	Volts

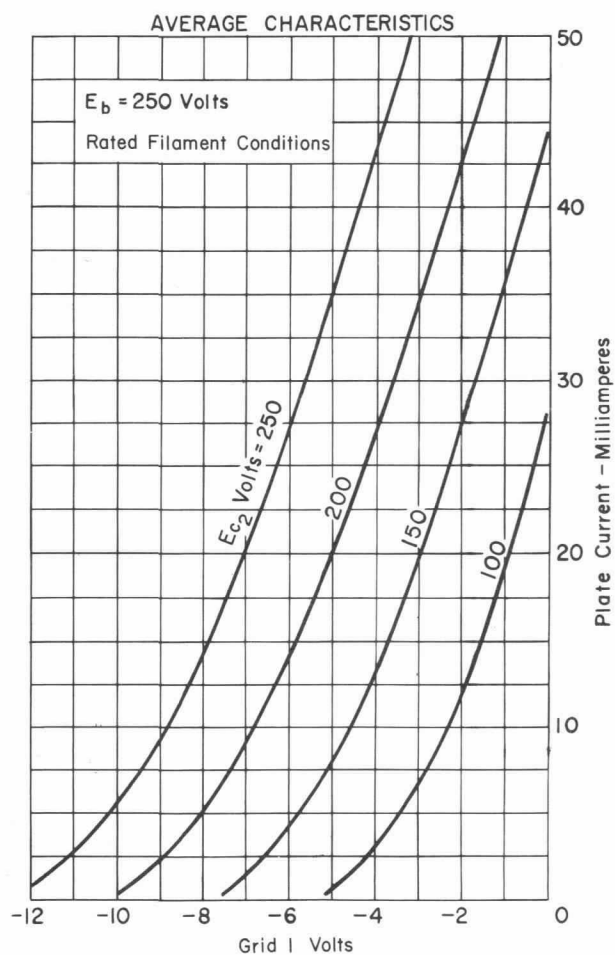
AMPLIFIER — CLASS A₁

Characteristics and Typical Operation

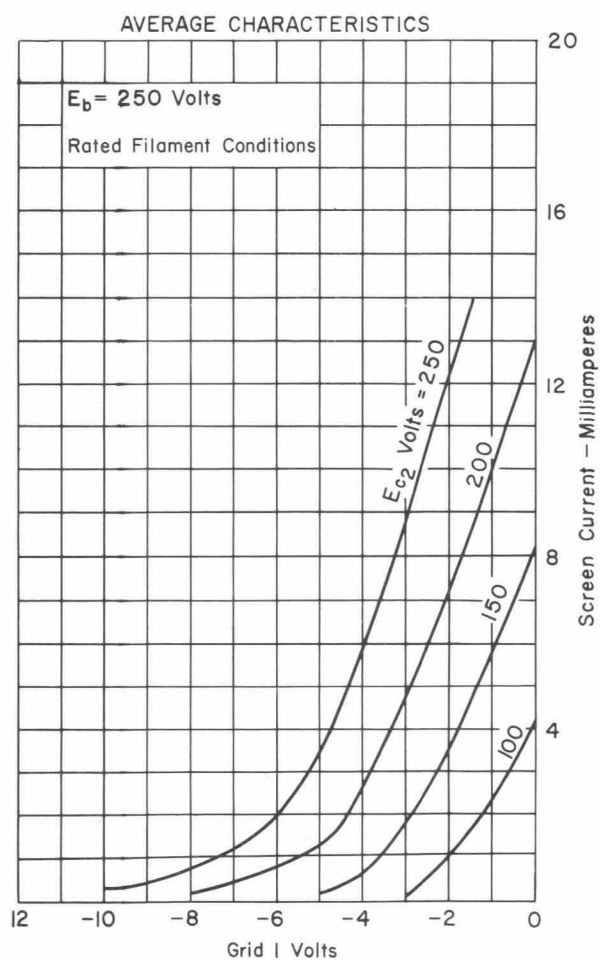
Plate Voltage	250	Volts
Grid 2 Voltage	250	Volts
Grid 1 Voltage	-5.0	Volts
Peak A-F Grid 1 Voltage	5.0	Volts
Plate Resistance (Approx.)	100000	Ohms
Transconductance	8500	μmhos
Zero Signal Plate Current	35	ma.
Maximum Signal Plate Current (Approx.)	37	ma.
Zero Signal Screen Current	3.5	ma.
Maximum Signal Screen Current	10	ma.
Load Resistance	6500	Ohms
Total Harmonic Distortion (Approx.)	7	Per Cent
Power Output	3.5	Watts

Maximum Circuit Values

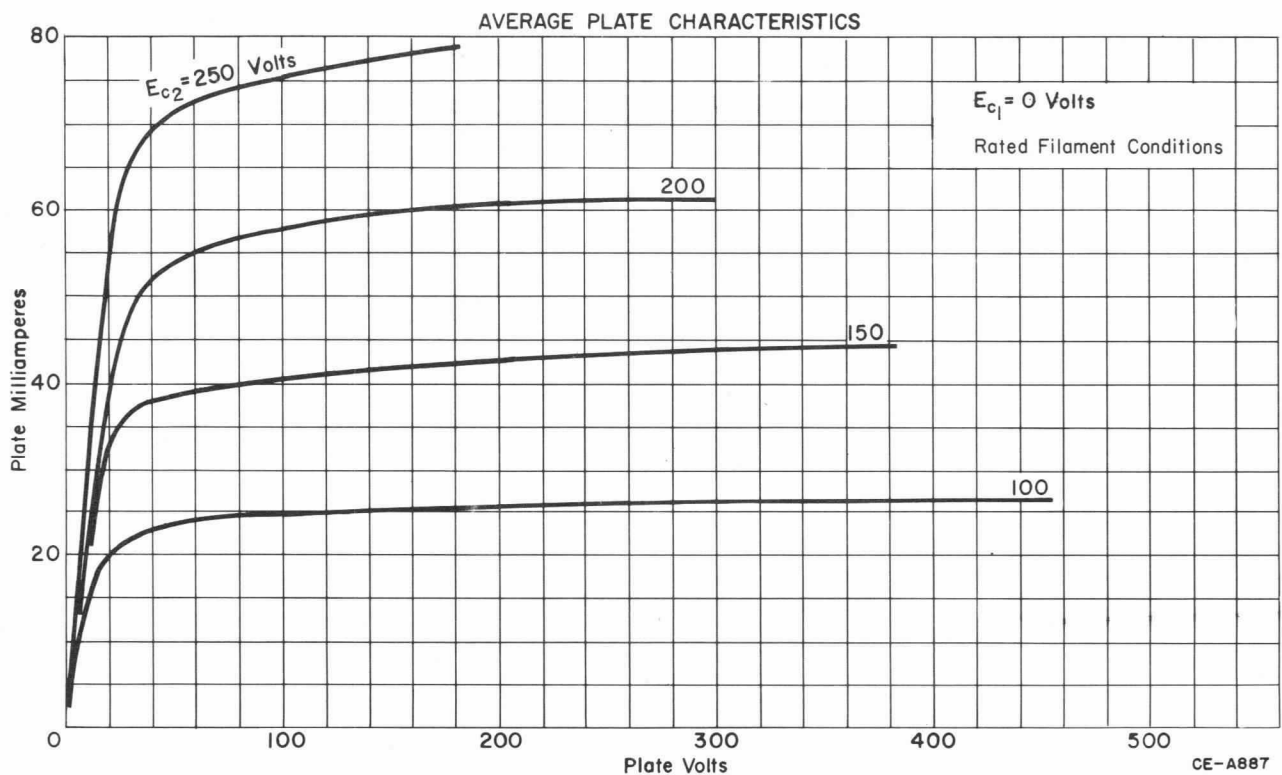
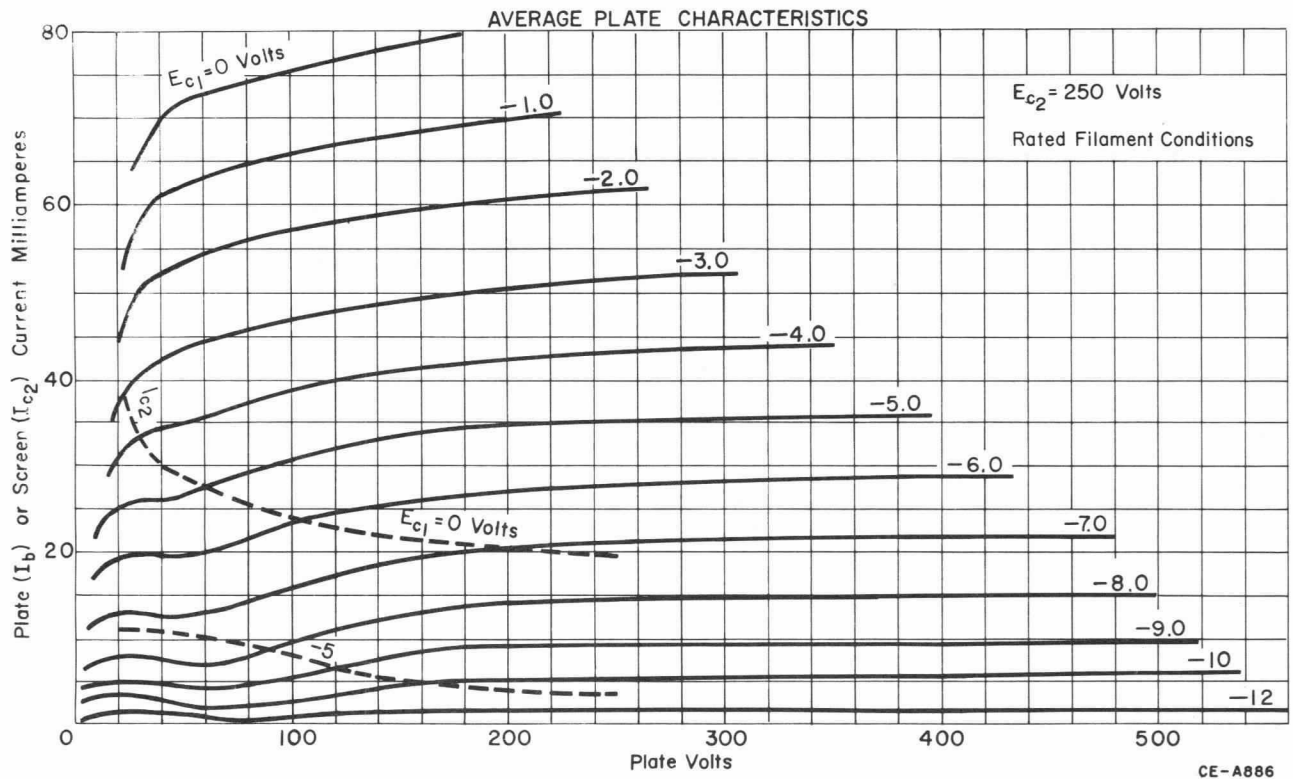
Grid 1 Circuit Resistance	
Fixed Bias	0.1 max. Megohm
Cathode Bias	0.5 max. Megohm

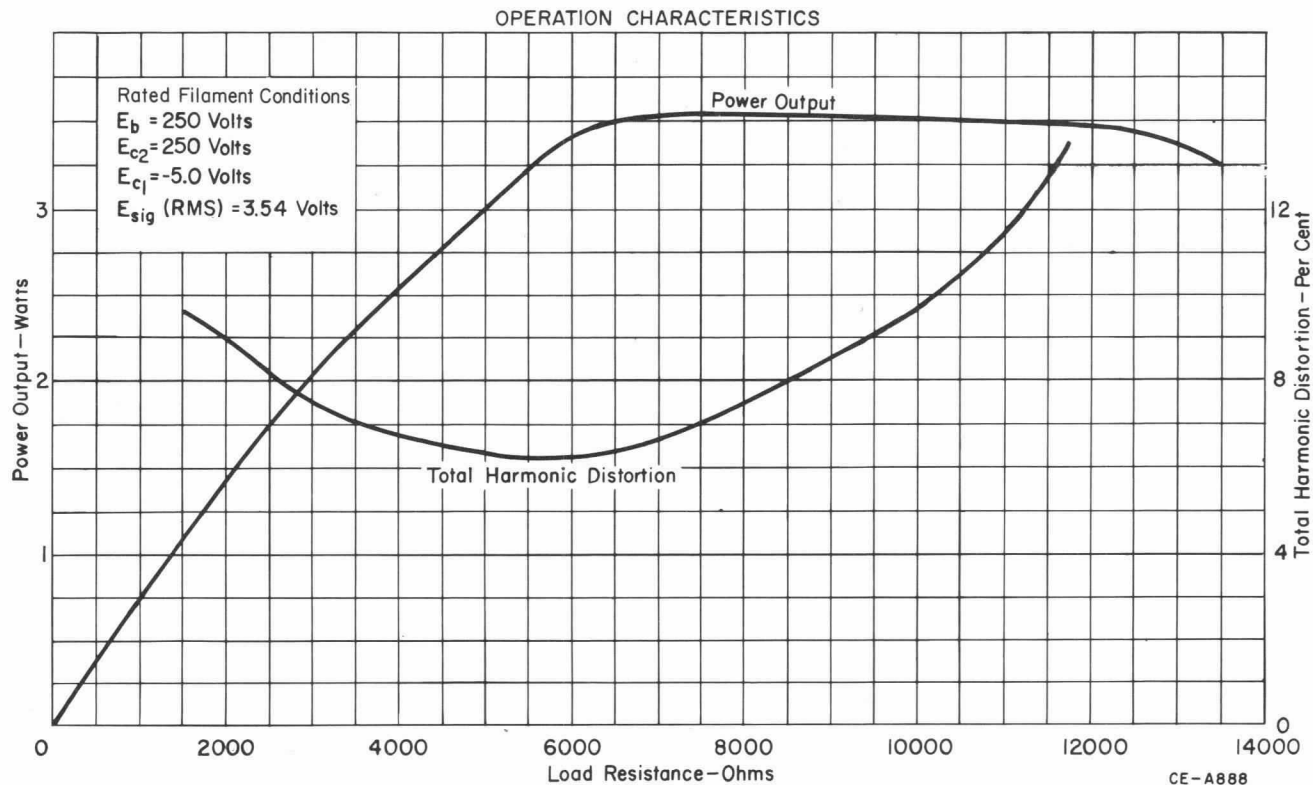


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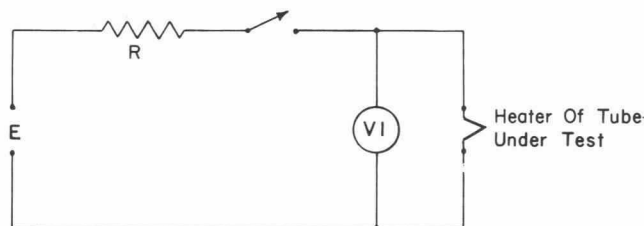
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HEATER WARM-UP TIME MEASUREMENTS

Heater warm-up time is defined as the time required for the voltage across the heater terminals to increase from zero to the heater test voltage (V_1) in the circuit shown below. The conditions used in conjunction with the test circuit depend upon the rated heater voltage and current of the tube under test as indicated.



E —Applied Voltage, RMS or DC	50	Volts
R —Total Series Resistance	63	Ohms
V_1 —Heater Test Voltage, RMS or DC	10.0	Volts
E_r —Rated Heater Voltage of Tube Under Test	12.6	Volts
I_r —Rated Heater Current of Tube Under Test	0.6	Ampere