

6669

BEAM PENTODE

FOR MOBILE COMMUNICATIONS EQUIPMENT

7-PIN MINIATURE
POWER OUTPUT—4.5 WATTS

HEATER-CYCLING RATING
PROTOTYPE—6AQ5

DESCRIPTION AND RATING

The 6669 is a miniature beam-power pentode designed for use as an audio-frequency power amplifier. Its electrical characteristics are essentially equivalent to those of the 6AQ5.

Intended specifically for use in mobile communications equipment, the 6669 may be operated without serious degradation under normal variations in supply voltage as encountered with automotive electrical systems. Also consistent with the requirements of this equipment, the tube is capable of withstanding appreciable on-off cycling.

GENERAL

ELECTRICAL

Cathode—Coated Unipotential	
Heater Voltage, AC or DC	6.3* Volts
Heater Current	0.45 Amperes
Direct Interelectrode Capacitances, approximate†	
Grid-Number 1 to Plate	0.4 $\mu\mu\text{f}$
Input	8.0 $\mu\mu\text{f}$
Output	8.5 $\mu\mu\text{f}$

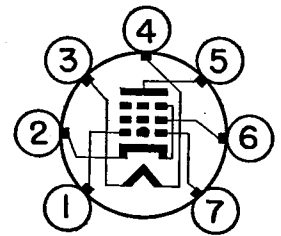
MECHANICAL

Mounting Position—Any
Envelope—T-5½, Glass
Base—E7-1, Miniature Button 7-Pin

* When operated from automotive electrical systems, the heater may be subjected to voltage variations as great as ± 20 percent. Although such extremes in heater voltage may be tolerated for short periods, increased equipment reliability can be achieved with improved supply-voltage regulation.

† Without external shield.

BASING DIAGRAM

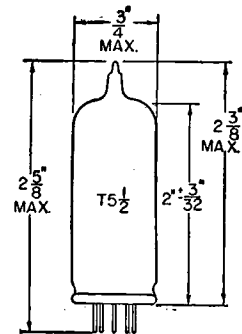


RETMA 7BZ

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

PHYSICAL DIMENSIONS



RETMA 5-3

MAXIMUM RATINGS

DESIGN-MAXIMUM VALUES‡

Plate Voltage	250	Volts
Screen Voltage	250	Volts
Plate Dissipation	12	Watts
Screen Dissipation	2.0	Watts
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	0.1	Megohms
With Cathode Bias	0.5	Megohms
Bulb Temperature at Hottest Point	225	C

‡ Design Maximum Ratings are the limiting values expressed with respect to bogie tubes at which satisfactory tube life can be expected to occur. To obtain satisfactory circuit performance, therefore, the equipment designer must establish the circuit design so that no design-maximum value is exceeded with a bogie tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, and environmental conditions.

CHARACTERISTICS AND TYPICAL OPERATION

CLASS A₁ AMPLIFIER

Plate Voltage	250	Volts
Screen Voltage	250	Volts
Grid-Number 1 Voltage	-12.5	Volts
Peak AF Grid-Number 1 Voltage	12.5	Volts
Plate Resistance, approximate	52,000	Ohms
Transconductance	4100	Micromhos
Zero-Signal Plate Current	45	Milliamperes
Maximum-Signal Plate Current	47	Milliamperes
Zero-Signal Screen Current	4.5	Milliamperes
Maximum-Signal Screen Current	7.0	Milliamperes
Load Resistance	5000	Ohms
Total Harmonic Distortion, approximate	8	Percent
Maximum-Signal Power Output	4.5	Watts

PUSH-PULL CLASS AB₁ 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	10,000	Ohms
Total Harmonic Distortion	5	Percent
Maximum-Signal Power Output	10	Watts

SPECIAL TESTS AND RATINGS

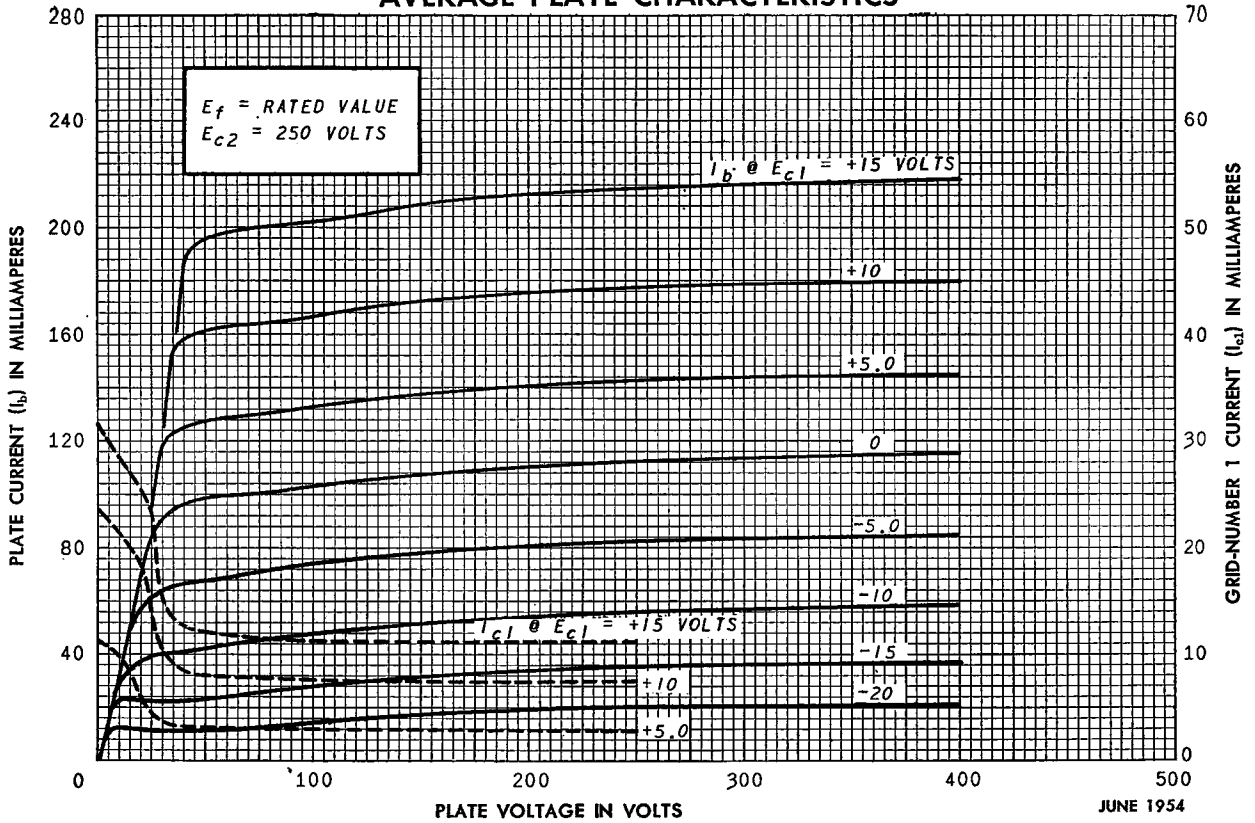
Heater-Cycling Life Test

Statistical sample operated for 2000 cycles to evaluate and control heater-cathode defects. Conditions of test include $E_f = 7.5$ volts cycled for one minute on and one minute off, $E_b = E_{c2} = E_{c1} = 0$ volts, and $E_{hk} = 135$ volts with heater positive with respect to cathode.

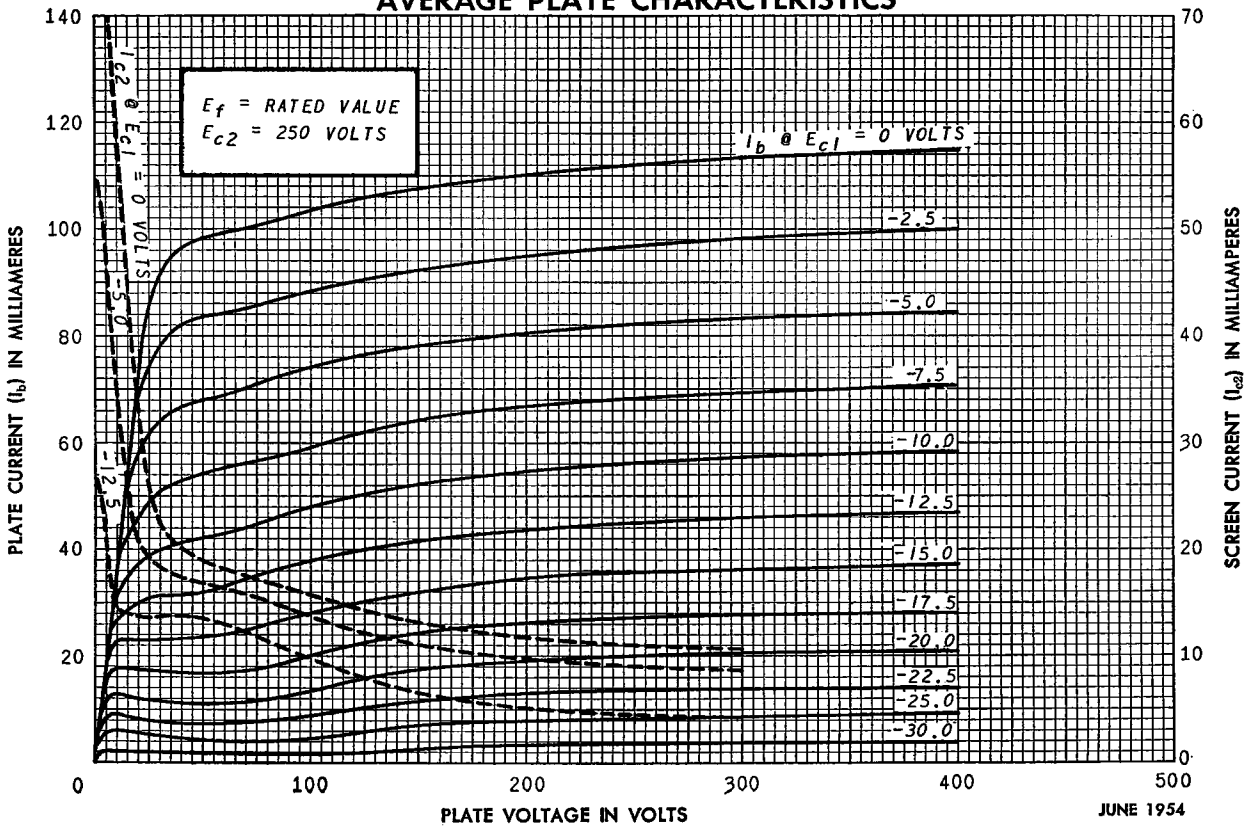
Average Power Output at Reduced Heater Voltage—4.1 Watts

$E_f = 5.0$ volts, $E_b = 250$ volts, $E_{c2} = 250$ volts, $E_{c1} = 12.5$ volts, $R_L = 5000$ ohms, $E_{sig} = 8.8$ volts (RMS)

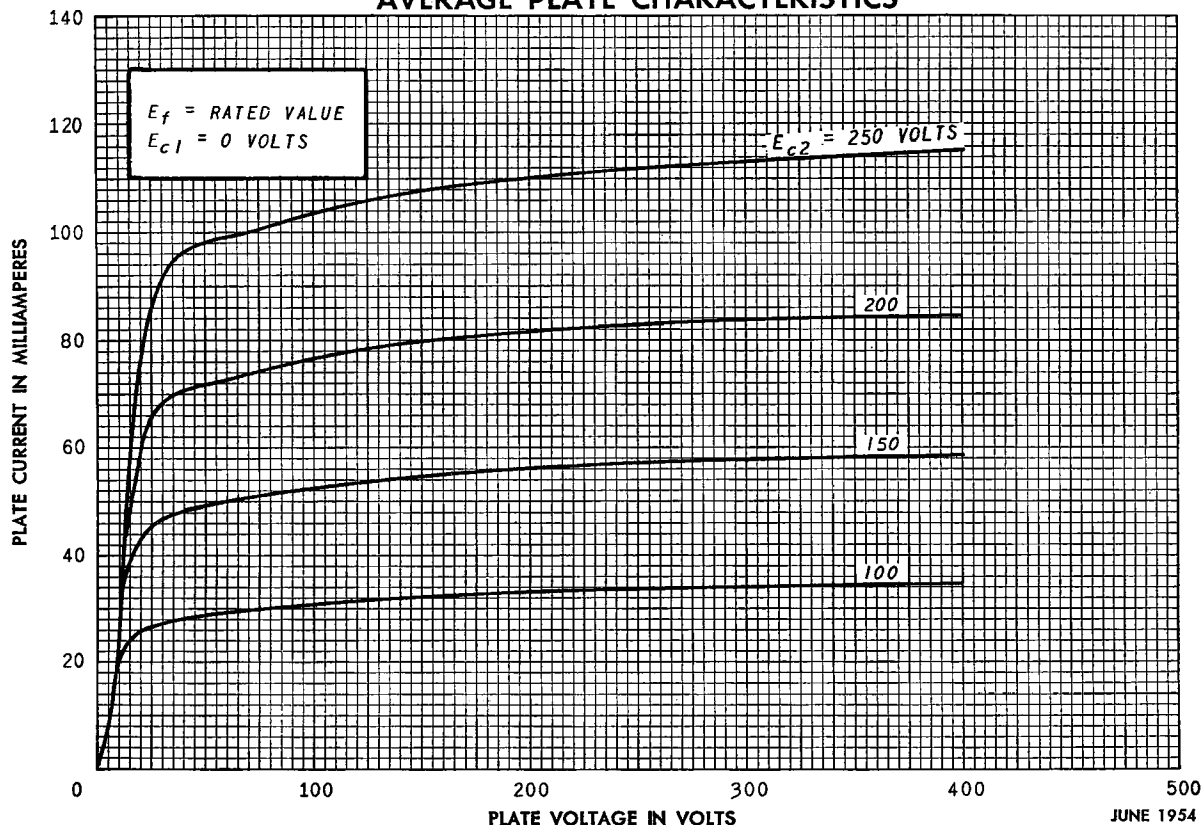
AVERAGE PLATE CHARACTERISTICS



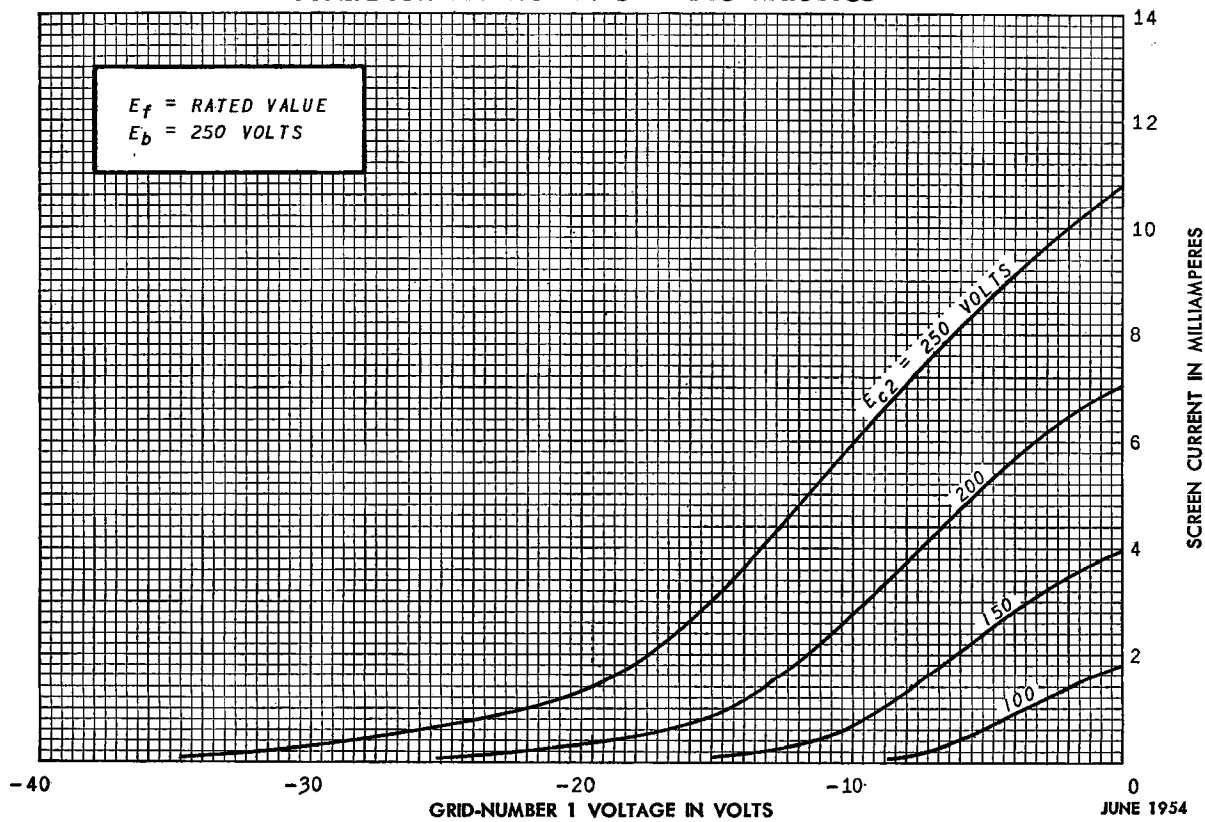
AVERAGE PLATE CHARACTERISTICS



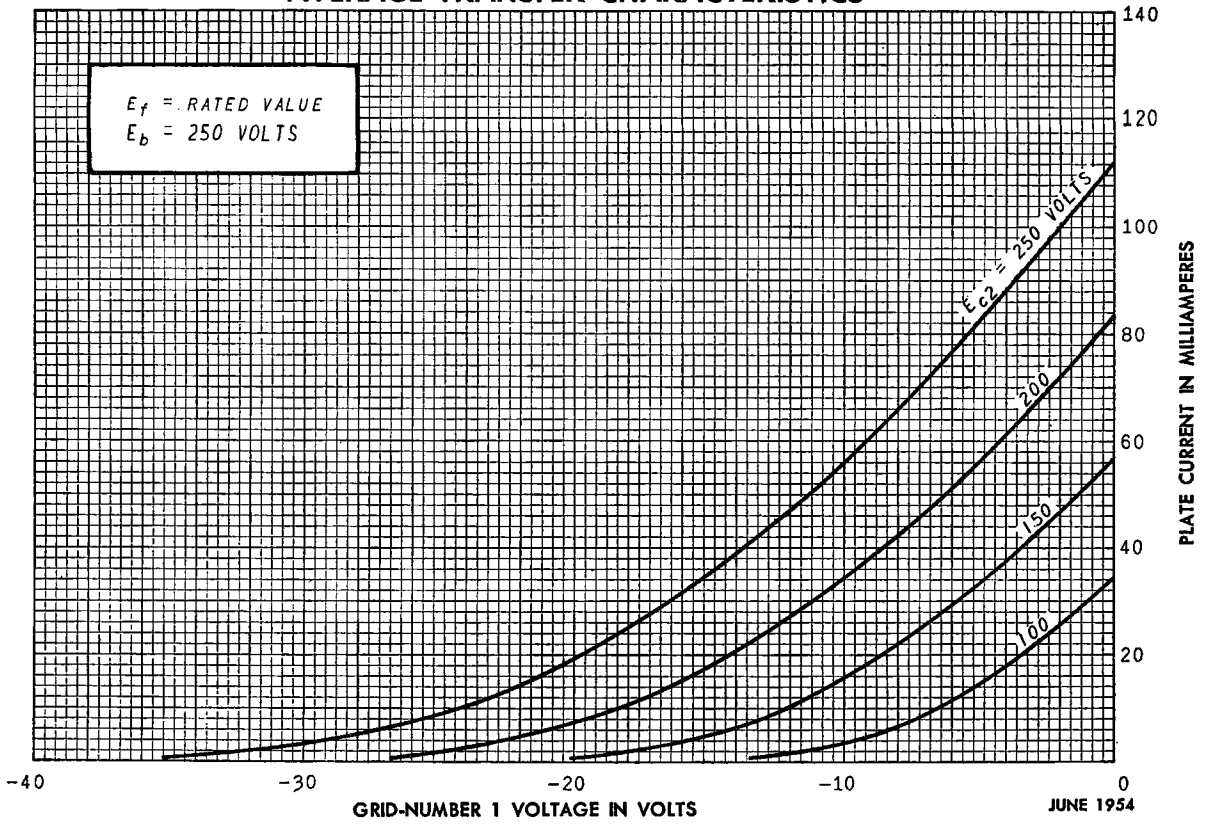
AVERAGE PLATE CHARACTERISTICS



AVERAGE TRANSFER CHARACTERISTICS



AVERAGE TRANSFER CHARACTERISTICS



OPERATION CHARACTERISTICS

