Electronic TUBES

5AR4

TWIN DIODE

FOR FULL-WAVE POWER-RECTIFIER APPLICATIONS

DESCRIPTION AND RATING

The 5AR4 is a heater-cathode twin diode designed for full-wave rectifier operation. High output current and small size make this tube especially suitable for compact amplifier designs.

GENERAL

ELECTRICAL

Cathode—Coated Unipotential

Heater Voltage, AC or DC	5.0 ± 10%	Volts
Heater Current	1.9	Amperes

MECHANICAL

Mounting Position—Any
Envelope—T-9, Glass
Base—B5-10, Intermediate-Shell Octal 5-Pin

MAXIMUM RATINGS

RECTIFIER SERVICE—DESIGN-MAXIMUM VALUES

Peak Inverse Plate Voltage	1700	Volts
AC Plate-Supply Voltage per Plate—See Rating Chart I		
Steady-State Peak Plate Current per Plate	825	Milliamperes
Transient Peak Plate Current per Plate, Maximum Duration 0.2 Second	3.7	Amperes
DC Output Current—See Rating Chart I		

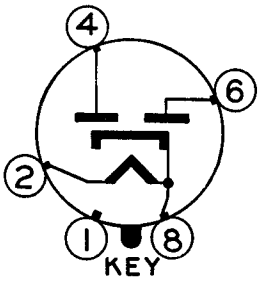
Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey tube of a specified type as defined by its published data, and should not be exceeded under the worst probable conditions.

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.

GENERAL ELECTRIC

BASING DIAGRAM



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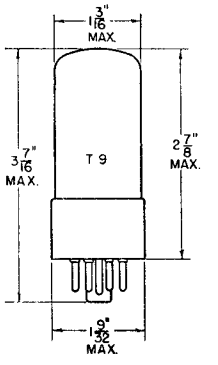
TERMINAL CONNECTIONS

Pin 1—Internal Connection
Pin 2—Heater
Pin 4—Plate Number 2
Pin 6—Plate Number 1
Pin 8—Heater and Cathode

PHYSICAL DIMENSIONS



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CHARACTERISTICS AND TYPICAL OPERATION

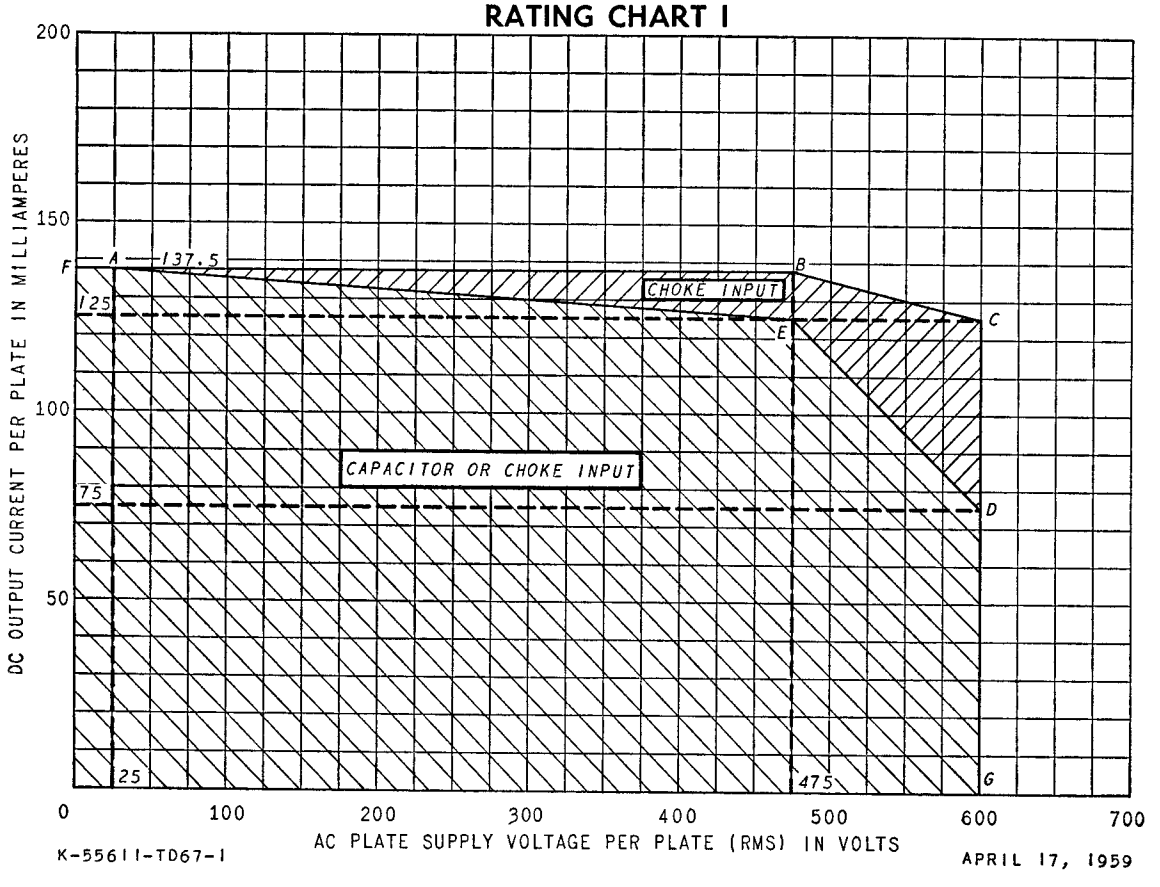
FULL-WAVE RECTIFIER WITH CAPACITOR-INPUT FILTER			
AC Plate-Supply Voltage per Plate, RMS	450	550	Volts
Total Plate-Supply Resistance per Plate	160	200	Ohms
DC Output Current	225	160	Milliamperes
DC Output Voltage at Filter Input	475	620	Volts
FULL-WAVE RECTIFIER WITH CHOKE-INPUT FILTER			
AC Plate-Supply Voltage per Plate, RMS	450	550	Volts
Filter Input Choke	10	10	Henrys
DC Output Current	250	225	Milliamperes
DC Output Voltage at Filter Input	375	465	Volts
Tube Voltage Drop			
Ib = 225 Milliamperes DC per Plate		17	Volts

To simplify the application of the maximum ratings to circuit design, the Design-Maximum ratings are presented in chart form as Rating Charts I, II, and III. Rating Chart I presents the maximum ratings for a-c plate supply voltage and d-c output current. Rating Chart II provides a convenient method for checking conformance with the maximum steady-state peak-plate-current rating. Rating Chart III offers a convenient method for checking conformance with the maximum transient peak-plate-current rating. Rating Chart I applies to both capacitor-input and choke-input filters, while Rating Charts II and III apply to capacitor-input filters only.

Operating points should be so selected that the boundary limits of a-c plate supply voltage and d-c output current on Rating Chart I, and maximum d-c output current per plate and rectification efficiency on Rating Chart II, are not exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, and environmental conditions. On Rating Chart I the boundary FAEDG defines the limits for capacitor-input filter operation, and the boundary FABCDG defines the limits for choke-input filter operation.

Rating Chart III shows the minimum value of plate supply resistance (R_s) required to remain within the transient peak-plate-current rating. The value of R_s should be such that it lies to the left of the line on Rating Chart III at the highest probable value of line voltage.

RATING CHART I



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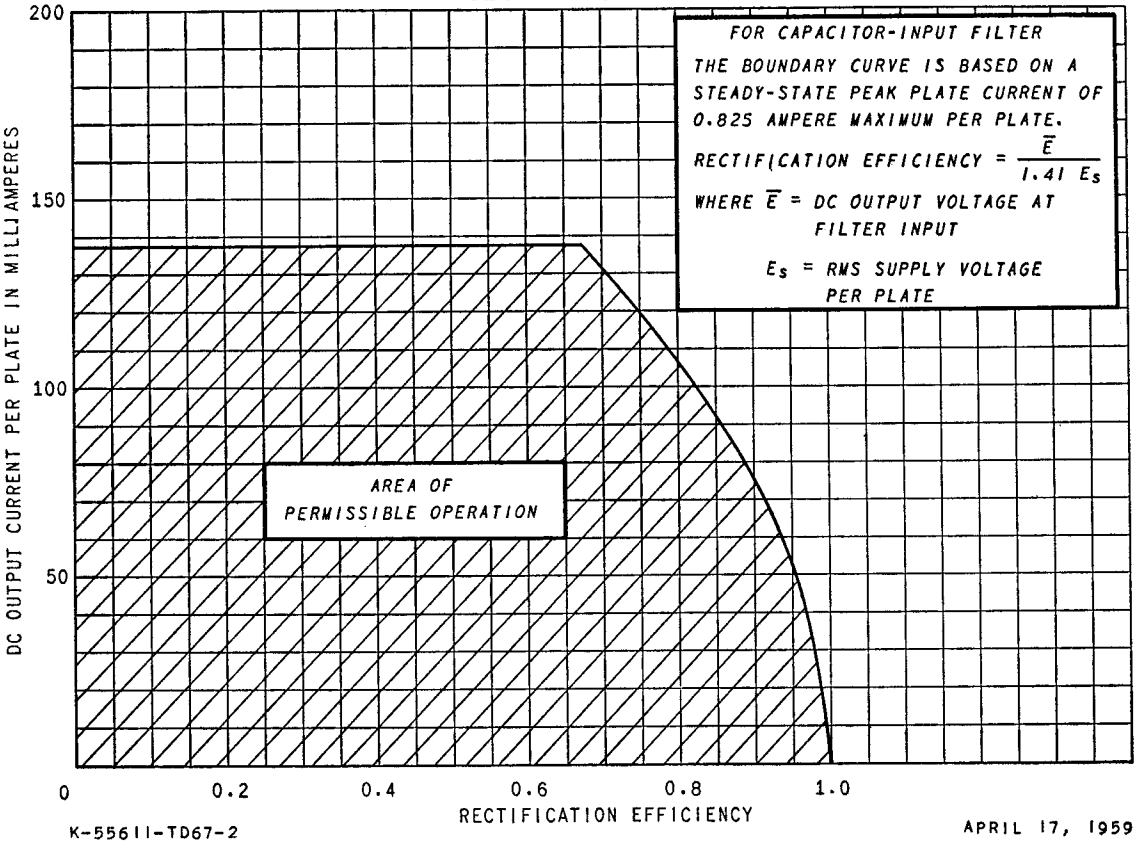
RATING CHART II



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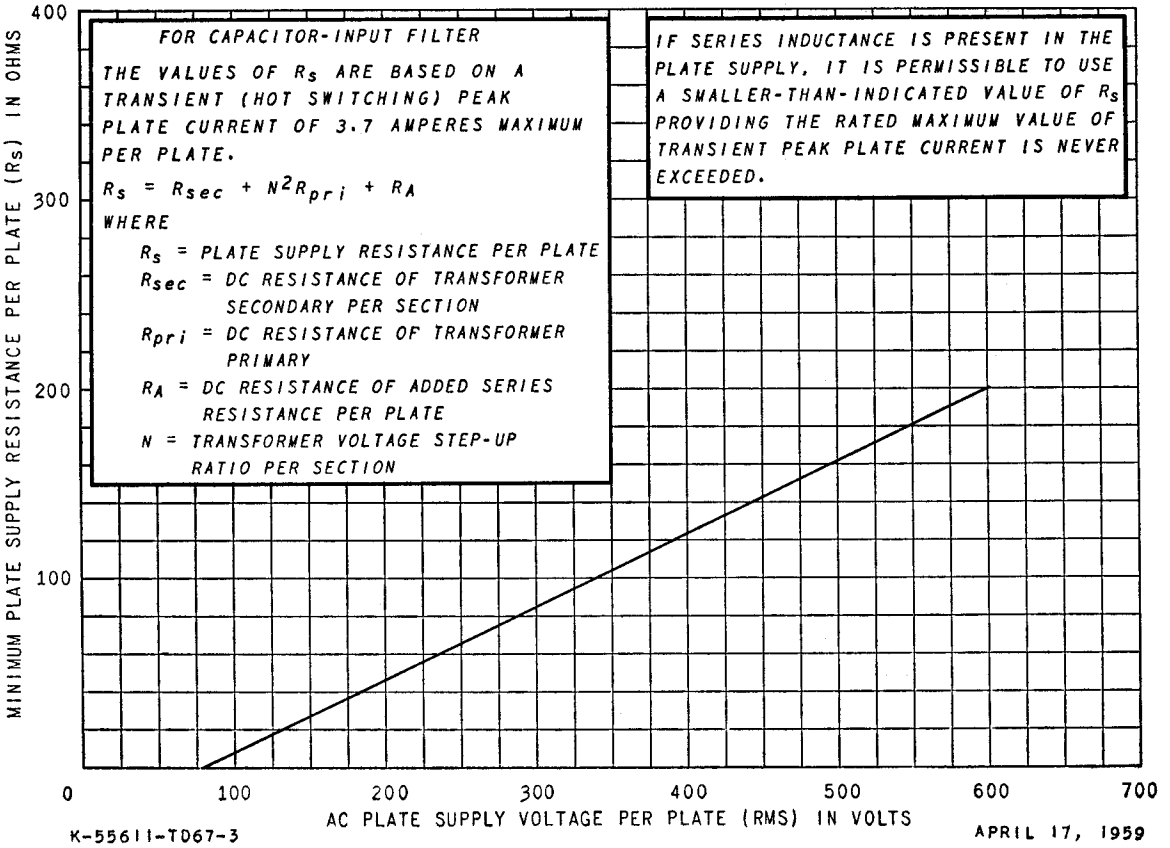
RATING CHART III



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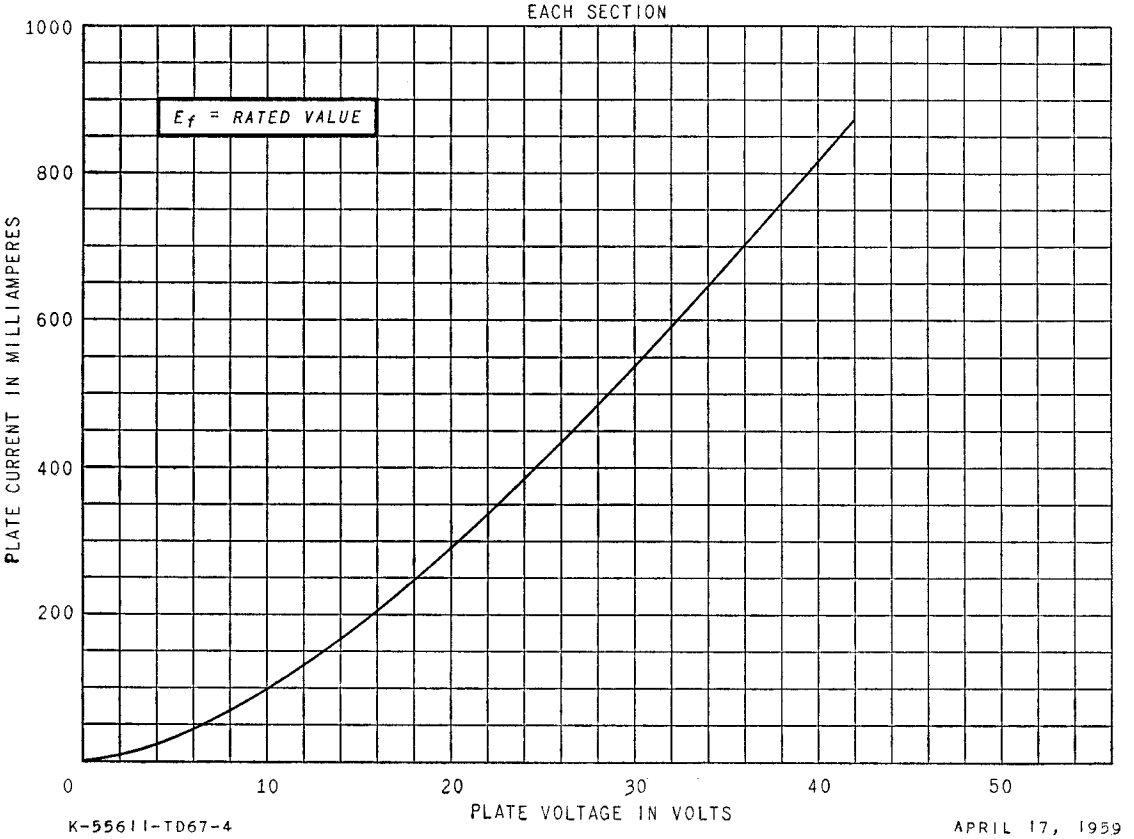
AVERAGE PLATE CHARACTERISTICS

EACH SECTION



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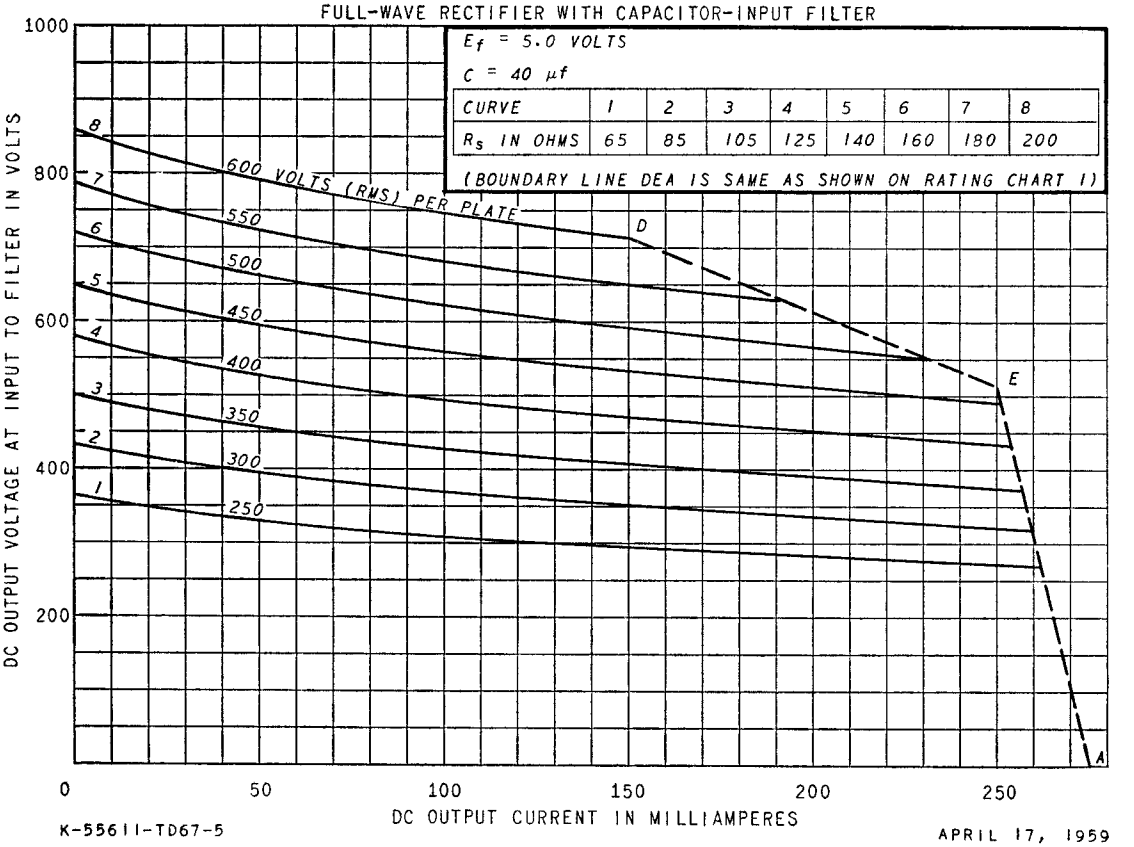
OPERATION CHARACTERISTICS

FULL-WAVE RECTIFIER WITH CAPACITOR-INPUT FILTER



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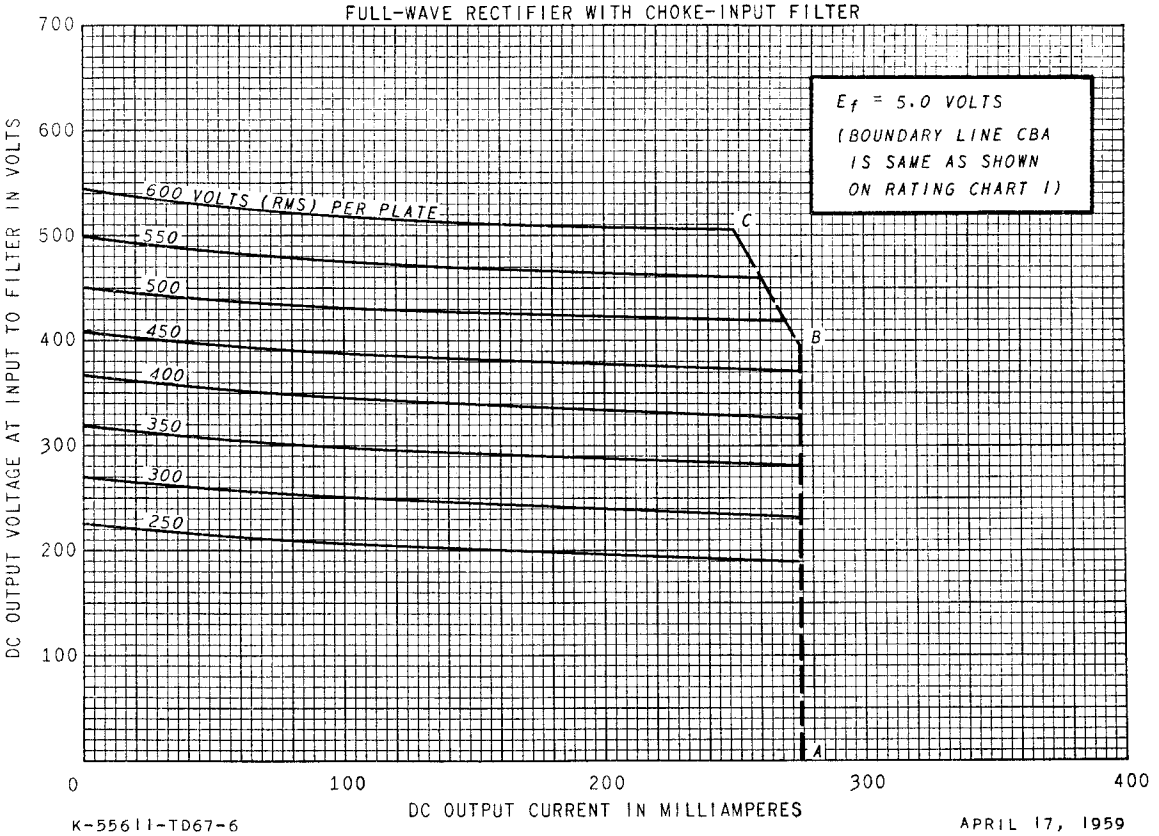
OPERATION CHARACTERISTICS

FULL-WAVE RECTIFIER WITH CHOKE-INPUT FILTER



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