



**6X4**

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ET-T865A  
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**TWIN DIODE**

**FOR FULL-WAVE POWER-RECTIFIER APPLICATIONS**

**DESCRIPTION AND RATING**

The 6X4 is a miniature heater-cathode type twin diode designed for full-wave rectifier operation in compact power supplies. The tube is intended for service in automobile and a-c radio receivers.

**GENERAL**

**ELECTRICAL**

Cathode—Coated Unipotential  
 Heater Voltage, AC or DC.....6.3 ±10%\* Volts  
 Heater Current.....0.6 Amperes

**MECHANICAL**

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

**MAXIMUM RATINGS**

**RECTIFIER SERVICE—DESIGN-MAXIMUM VALUES**

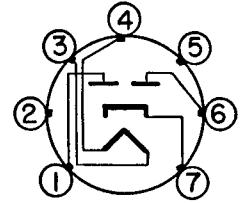
Peak Inverse Plate Voltage.....1250 Volts  
 AC Plate-Supply Voltage per Plate—See Rating Chart I†  
 Steady-State Peak Plate Current per Plate.....245 Milliamperes  
 Transient Peak Plate Current per Plate,  
 Maximum Duration 0.2 Second.....1.1 Amperes  
 DC Output Current—See Rating Chart I†  
 Heater-Cathode Voltage  
 Heater Positive with Respect to Cathode  
 DC Component.....100 Volts  
 Total DC and Peak.....200 Volts  
 Heater Negative with Respect to Cathode  
 Total DC and Peak.....450 Volts

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.

**BASING DIAGRAM**

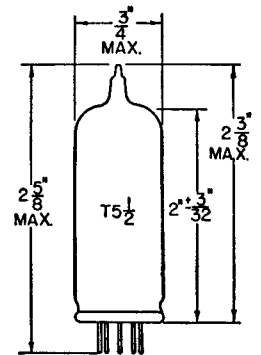


EIA 58S

**TERMINAL CONNECTIONS**

- Pin 1—Plate Number 2
- Pin 2—No Connection
- Pin 3—Heater
- Pin 4—Heater
- Pin 5—No Connection
- Pin 6—Plate Number 1
- Pin 7—Cathode

**PHYSICAL DIMENSIONS**



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## CHARACTERISTICS AND TYPICAL OPERATION

<b>FULL-WAVE RECTIFIER</b>	<b>Choke Input-Filter</b>	<b>Capacitor Input-Filter</b>	<b>Vibrator Operation Capacitor Input-Filter</b>
AC Plate-Supply Voltage per Plate, RMS . . . . .	450	325	. . . Volts
Filter Input Capacitor . . . . .	. . .	10	10 $\mu$ f
Filter Input Choke . . . . .	10	. . .	. . . Henrys
Total Plate-Supply Resistance per Plate . . . . .	. . .	525	. . . Ohms
DC Output Current . . . . .	70	70	70 Milliamperes
DC Output Voltage at Filter Input			
For DC Output Current of 35 Milliamperes . . . . .	350	365	. . . Volts
For DC Output Current of 70 Milliamperes . . . . .	340	310	240 Volts
Tube Voltage Drop			
I <sub>b</sub> = 70 Milliamperes DC per Plate . . . . .	. . .	22	. . . Volts

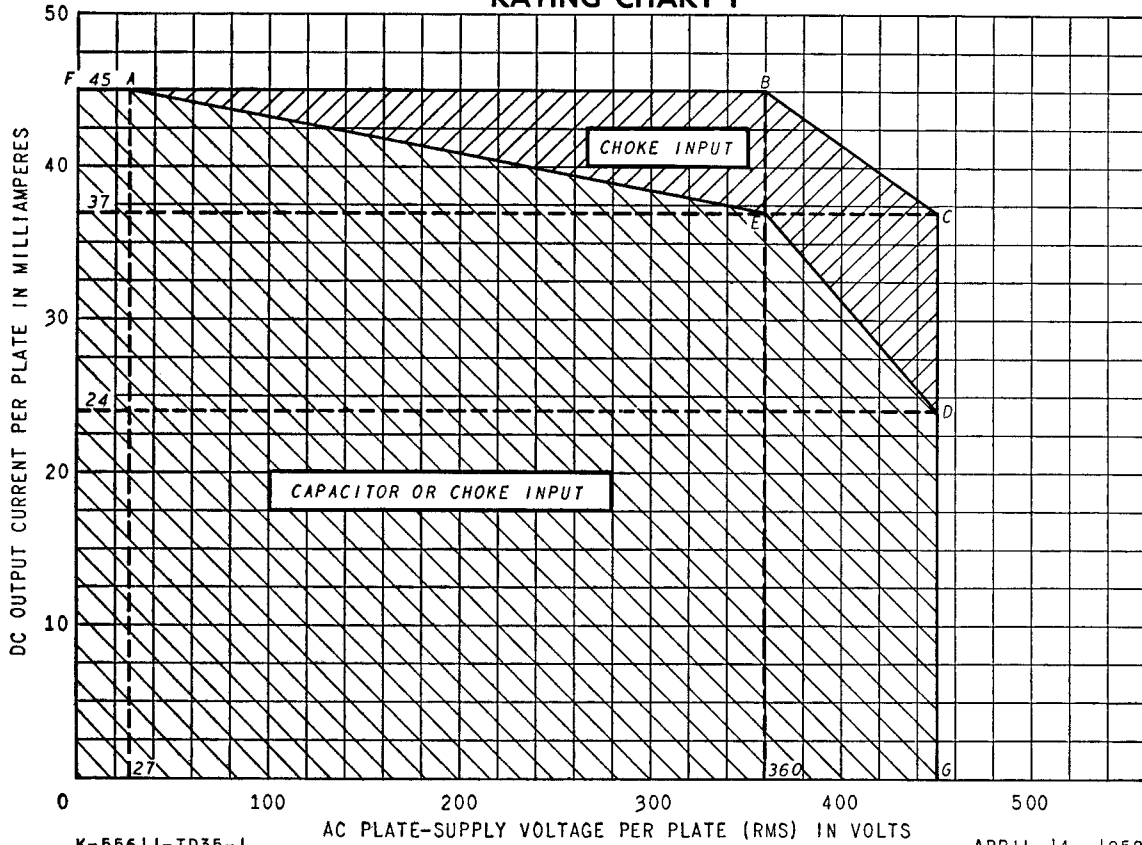
\* When used in automotive service from a 6-volt battery source, the permissible range in heater voltage is from 5.0 to 8.0 volts.

† 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.

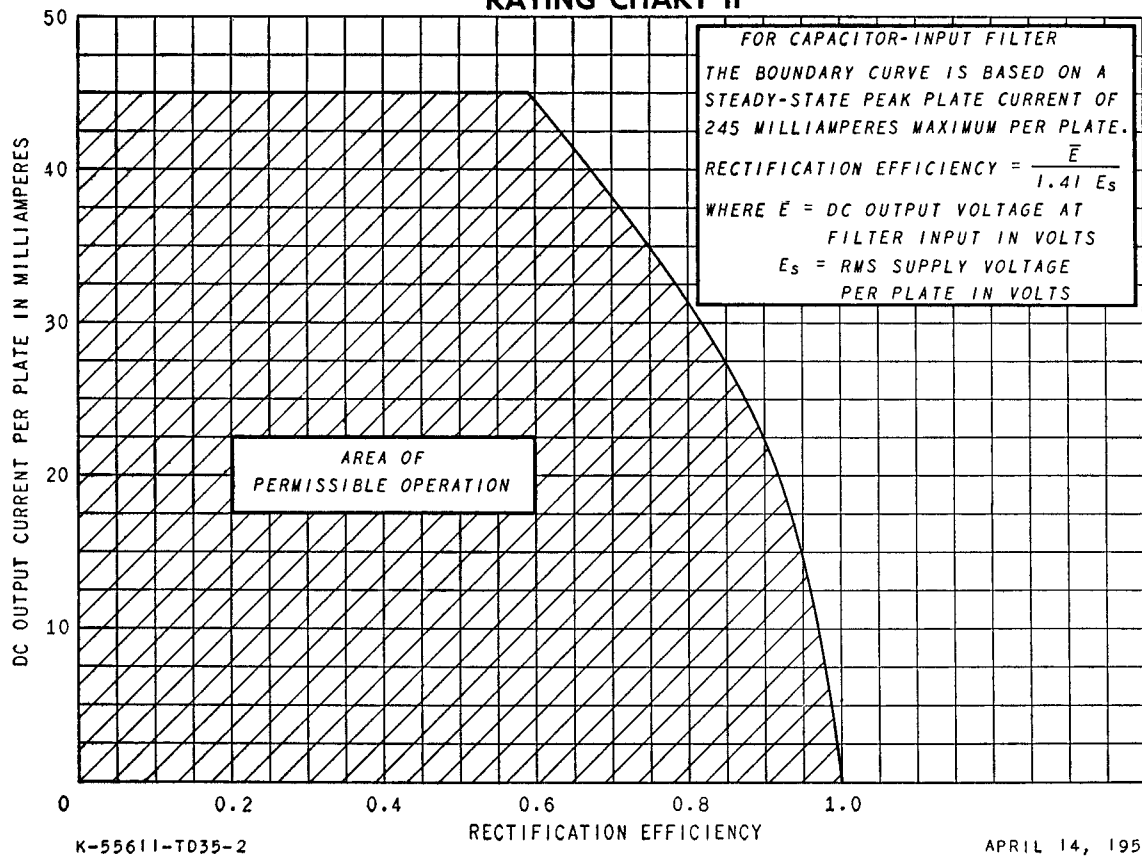
Operating points should be so selected that the boundary limits of a-c plate-supply voltage and d-c output current on Rating Chart I, and maximum d-c output current per plate and rectification efficiency on Rating Chart II, are not exceeded with a bogey tube under the worst probable operating conditions 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.

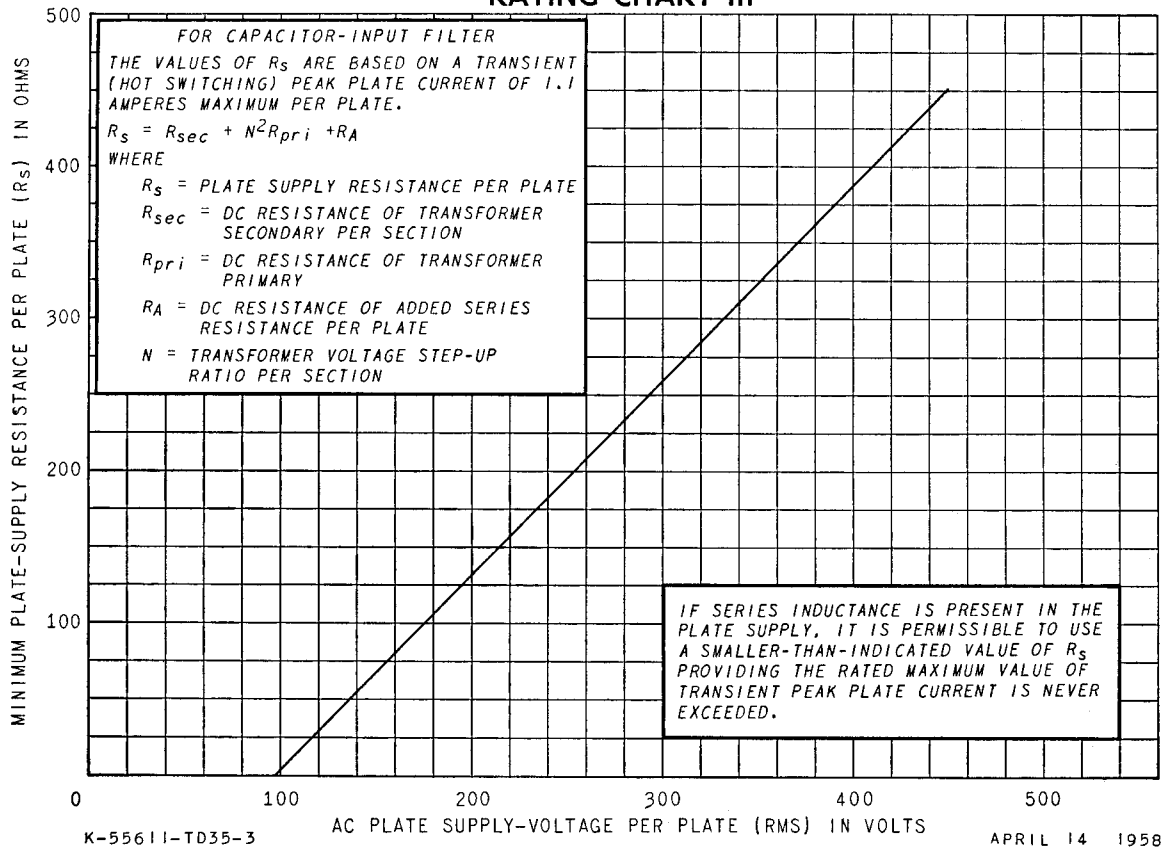
**RATING CHART I**



**RATING CHART II**



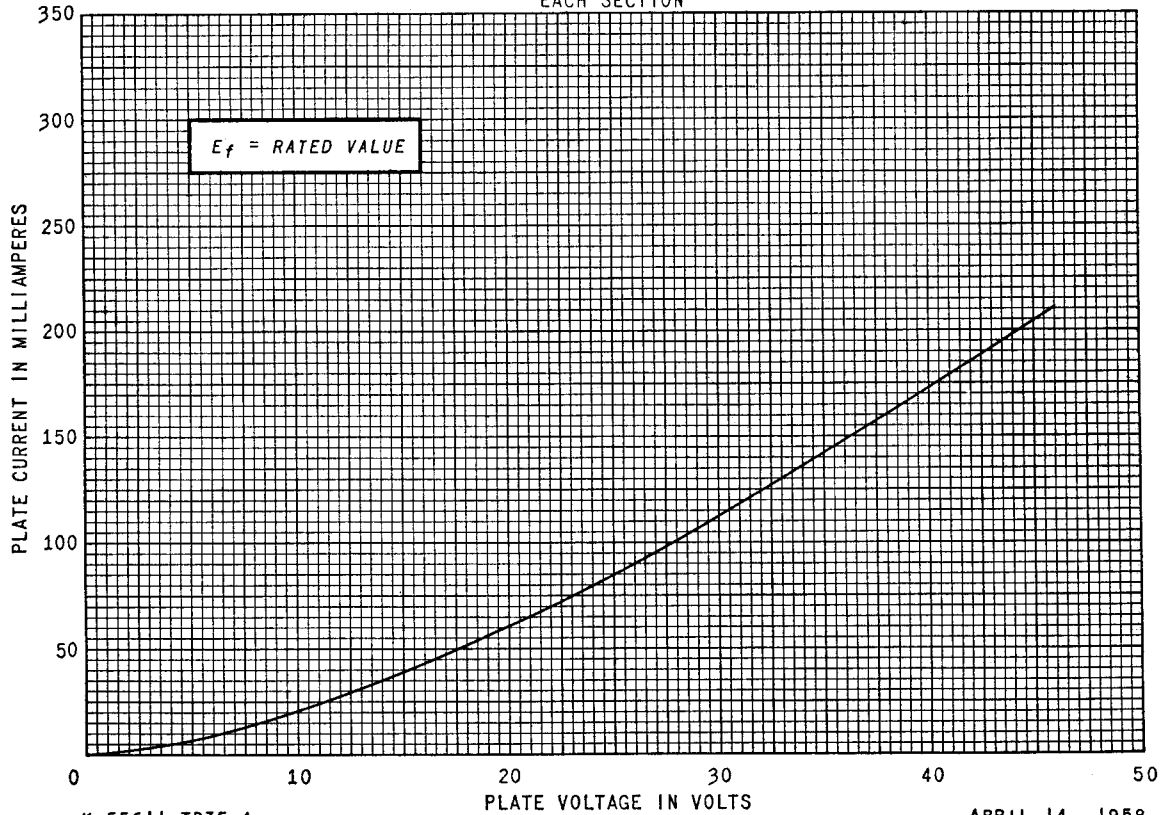
**RATING CHART III**



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**AVERAGE PLATE CHARACTERISTICS**

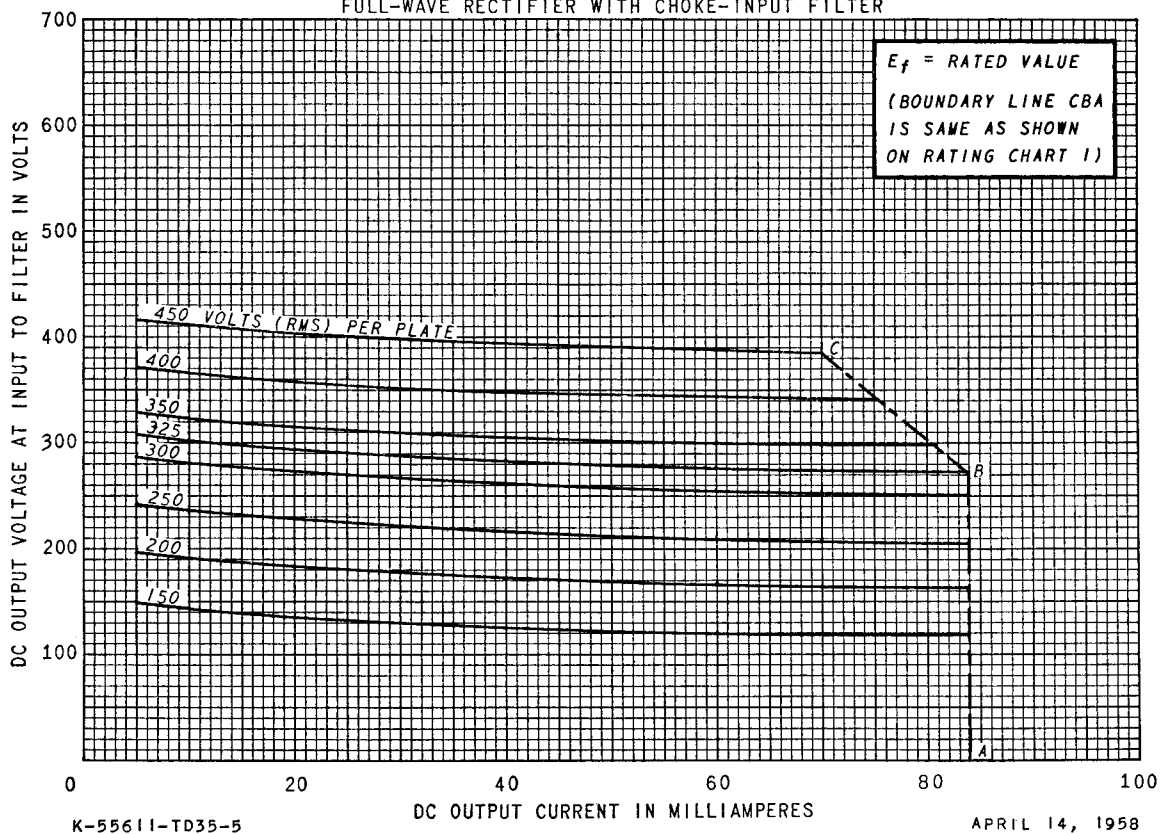
EACH SECTION



APRIL 14, 1958

**OPERATION CHARACTERISTICS**

FULL-WAVE RECTIFIER WITH CHOKE-INPUT FILTER



**OPERATION CHARACTERISTICS**

FULL-WAVE RECTIFIER WITH CAPACITOR-INPUT FILTER

