Electronic TUBES

3DG4

TWIN DIODE

FOR FULL-WAVE POWER RECTIFIER APPLICATIONS

DESCRIPTION AND RATING

The 3DG4 is a twin diode with directly heated cathode designed for use as a full-wave rectifier in the power supply of television receivers.

GENERAL

ELECTRICAL

Cathode—Coated Directly Heated

Cathode-Heating Voltage, AC or DC	3.3 ± 10%	Volts
Cathode-Heating Current	3.8	Amperes

MECHANICAL

Mounting Position—Any
Envelope—T-12, Glass
Base—Short Medium-Shell Octal 5-Pin

MAXIMUM RATINGS

RECTIFIER SERVICE—DESIGN-MAXIMUM VALUES

Peak Inverse Plate Voltage	1050	Volts
AC Plate-Supply Voltage per Plate—See Rating Chart I		
Steady-State Peak Plate Current per Plate	1200	Milliamperes
Transient Peak Plate Current per Plate, Maximum Duration 0.2 Second	6.5	Amperes
DC Output Current—See Rating Chart I		
Bulb Temperature at Hottest Point	200	C

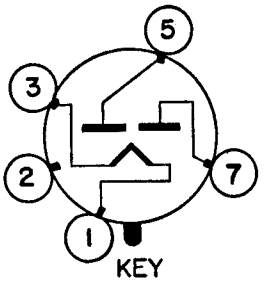
Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey tube of a specified type as defined by its published data, and should not be exceeded under the worst probable conditions.

These values are chosen by the tube manufacturer to provide acceptable serviceability of the tube, taking responsibility for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

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, variation in characteristics of all other tubes in the equipment, equipment control adjustment, load variation, signal variation, and environmental conditions.

GENERAL ELECTRIC

BASING DIAGRAM



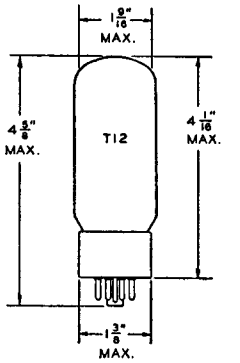
EIA 5DE

TERMINAL CONNECTIONS

Pin 1—Cathode*
Pin 2—Internal Connection—Do Not Use
Pin 3—Cathode*
Pin 5—Plate Number 2
Pin 7—Plate Number 1

* Opposite ends of the directly heated cathode are connected to pins 1 and 3. Cathode-heating voltage should be connected between these pins. Output current may be taken from either pin 1 or pin 3.

PHYSICAL DIMENSIONS



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CHARACTERISTICS AND TYPICAL OPERATION

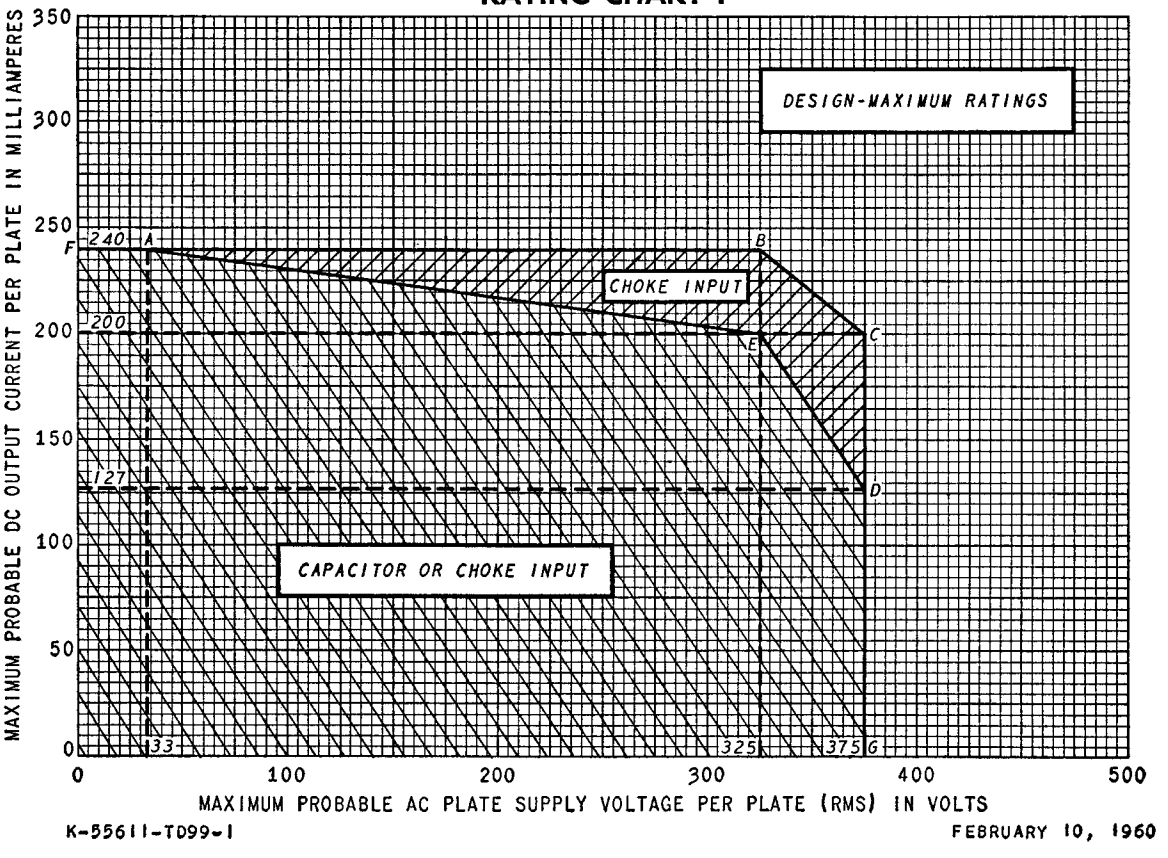
FULL-WAVE RECTIFIER	**Capacitor-Input Filter**	
AC Plate-Supply Voltage per Plate, RMS	275	Volts
Filter Input Capacitor	40	Microfarads
Total Plate-Supply Resistance per Plate	32	Ohms
DC Output Current	350	Milliamperes
DC Output Voltage at Filter Input	300	Volts
Tube Voltage Drop		
Ib = 350 Milliamperes DC per Plate	25	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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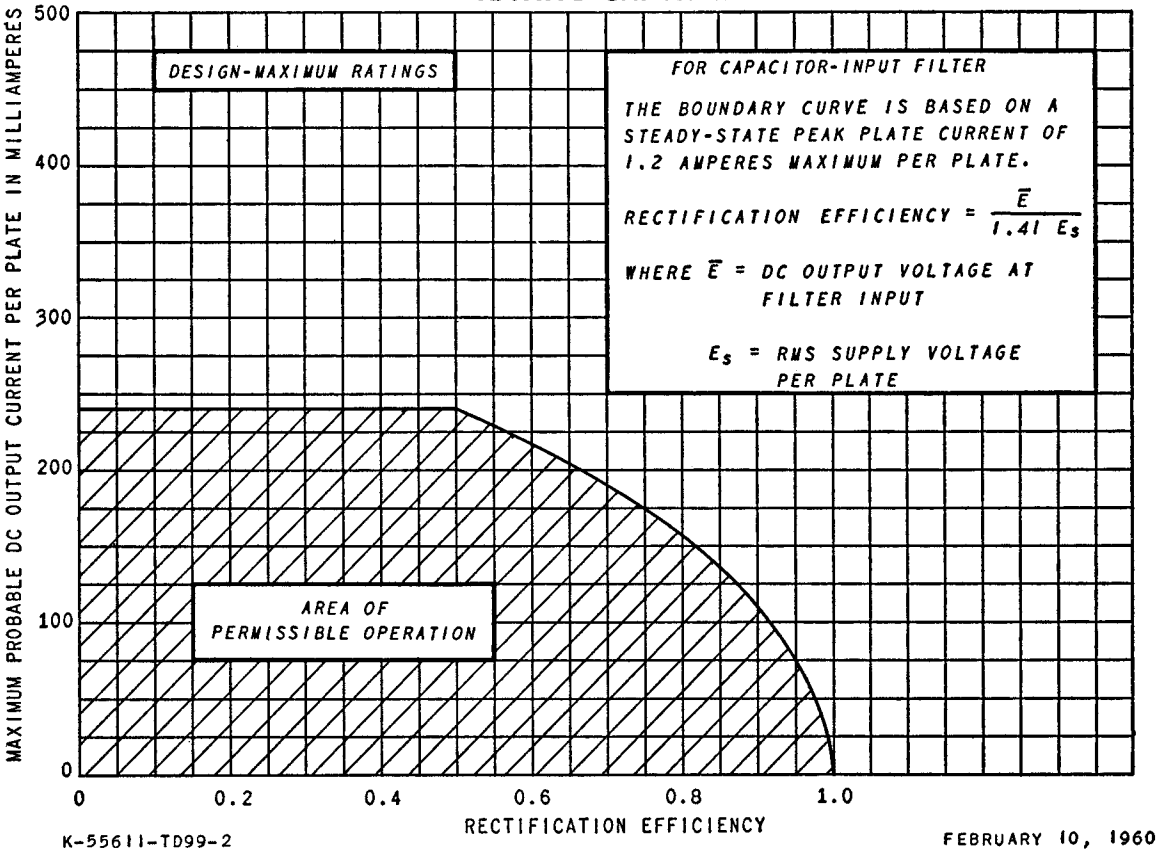
RATING CHART II



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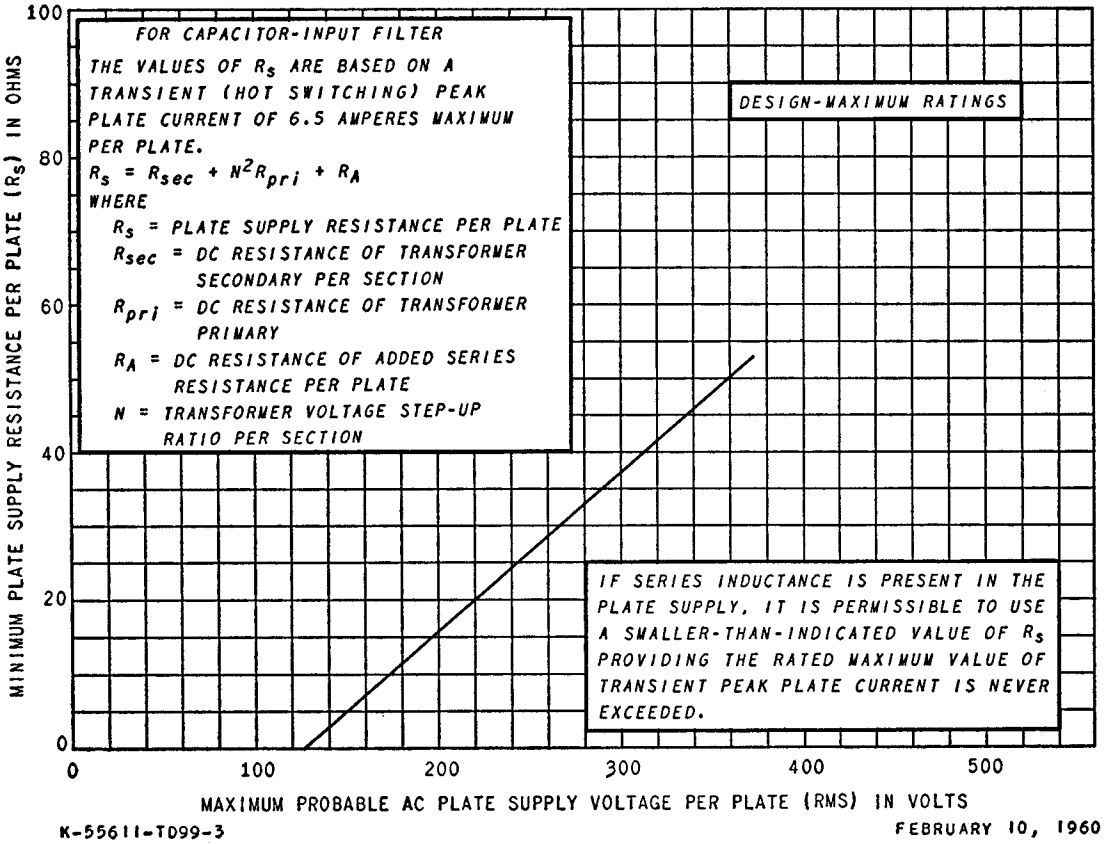
RATING CHART III



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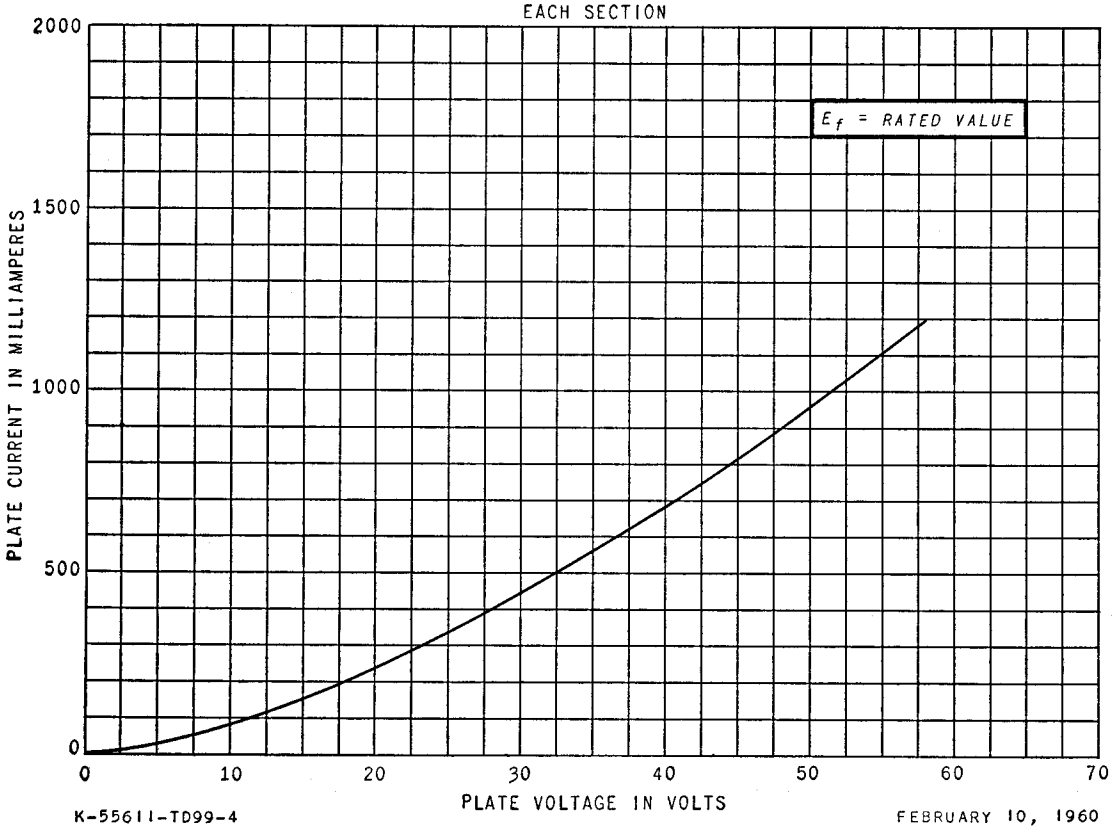
AVERAGE PLATE CHARACTERISTICS

EACH SECTION



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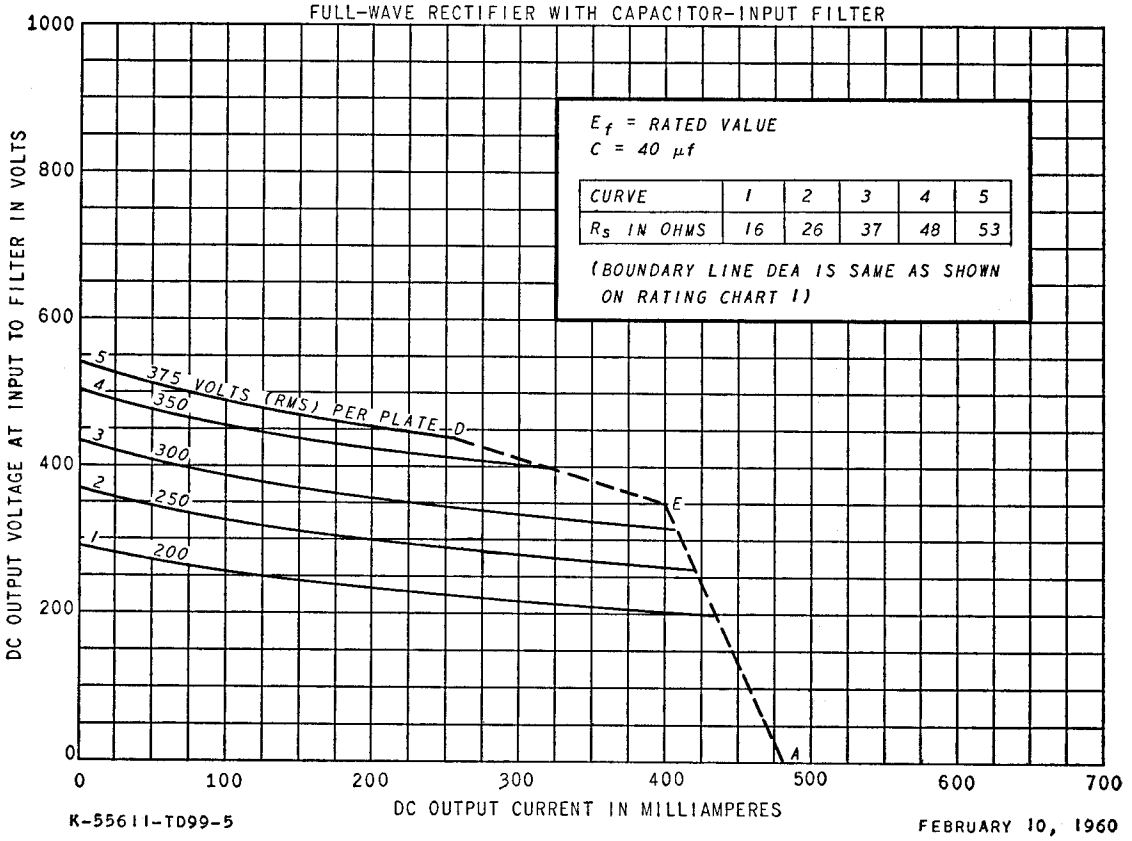
OPERATION CHARACTERISTICS

FULL-WAVE RECTIFIER WITH CAPACITOR-INPUT FILTER



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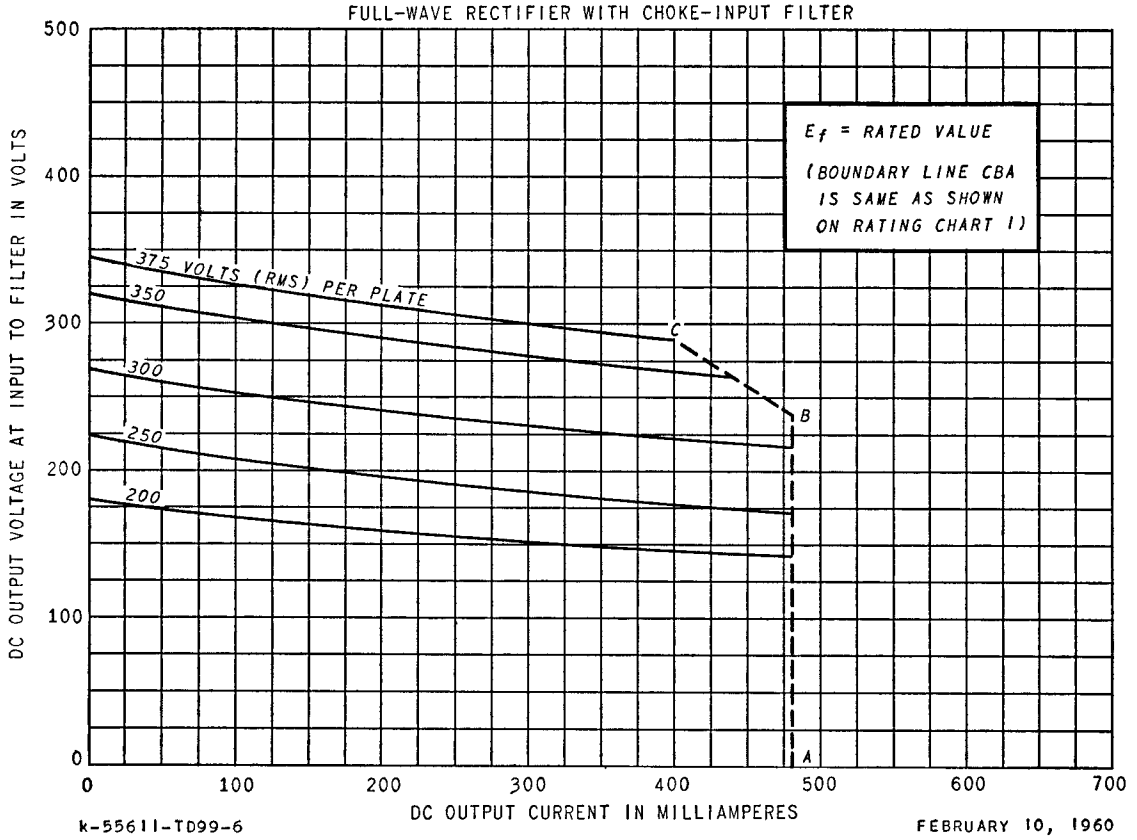
OPERATION CHARACTERISTICS

FULL-WAVE RECTIFIER WITH CHOKE-INPUT FILTER



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