

# 5R4GYB

## Full-Wave Vacuum Rectifier

For Industrial & Military Applications

### GENERAL DATA

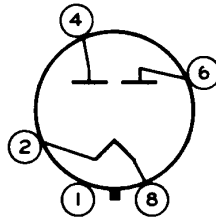
#### Electrical:

Filament, Coated:<sup>a</sup>  
 Voltage (AC or DC) . . . . . 5 volts  
 Current . . . . . 2 amp

#### Mechanical:

Operating Position . . . . . Vertical, base down or up, or  
 Horizontal with pins 2 and 4 in vertical plane  
 Maximum Overall Length . . . . . 4-1/4"  
 Maximum Seated Length . . . . . 3-11/16"  
 Diameter . . . . . 1.438" to 1.562"  
 Bulb . . . . . T12  
 Base . . . . . Short Medium-Shell Octal 5-Pin Micanol  
 with External Barriers, Style B, Arrangement 1  
 (JEDEC Group 1, No. B5-121)  
 Basing Designation for BOTTOM VIEW . . . . . 5T

Pin 1 - No Connection  
 Pin 2 - Filament



Pin 4 - Plate No. 2  
 Pin 6 - Plate No. 1  
 Pin 8 - Filament

### FULL-WAVE RECTIFIER

#### Maximum Ratings, Absolute-Maximum Values:

	For altitudes up to	40000	20000	feet
PEAK INVERSE PLATE VOLTAGE . . .	2650 max.	3100 max.		volts
AC PLATE SUPPLY VOLTAGE PER PLATE (RMS, without load) . . .	See Rating Chart I			
PEAK PLATE CURRENT PER PLATE . . .	715 max.	715 max.		ma
DC OUTPUT CURRENT PER PLATE . . .	See Rating Chart I			
HOT-SWITCHING TRANSIENT PLATE CURRENT PER PLATE . . . . .	b	b		
BULB TEMPERATURE (At hottest point on bulb surface) . . . . .	230 max.	230 max.		°C

#### Typical Operation:

With capacitor-input filter

	For altitudes up to	40000	20000	feet
AC-Plate-to-Plate Supply Voltage (RMS, without load) . . . . .	1400	1500	2000	volts
Filter-Input Capacitor . . . . .	20	20	20	μf
Total Effective Plate Supply Impedance Per Plate <sup>c</sup> . . . . .	225	250	375	ohms



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DC Output Voltage (Approx.) at

Input to Filter:

At half-load ma. =

75 . . . . .	-	910	1210	volts
125 . . . . .	750	-	-	volts

At full-load ma. =

150 . . . . .	-	800	1040	volts
250 . . . . .	605	-	-	volts

Voltage Regulation (Approx.):

Half-load to full-load

current . . . . .	145	110	170	volts
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DC Output Current . . . . .	250	150	150	ma
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*With choke-input filter*

<i>For altitudes up to</i>	<i>40000</i>	<i>20000</i>	<i>feet</i>
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AC Plate-to-Plate Supply

Voltage (RMS, without load) . . . . .	1500	1900	volts
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Filter-Input Choke . . . . .

	5	10	henrys
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DC Output Voltage (Approx.) at

Input to Filter for dc out-

put ma. =

87.5 . . . . .	-	800	volts
125 . . . . .	600	-	volts
175 . . . . .	-	760	volts
250 . . . . .	560	-	volts

Voltage Regulation (Approx.):

Half-load to full-load

current . . . . .	40	40	volts
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DC Output Current . . . . .	250	175	ma
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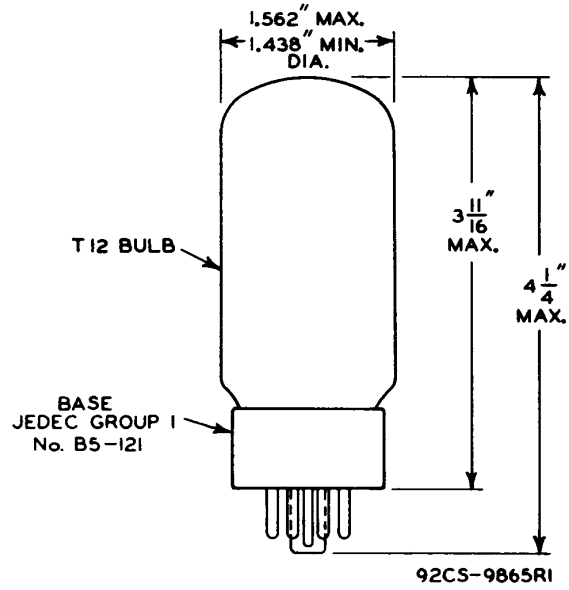
<sup>a</sup> See accompanying chart *Operating Areas for Simultaneous and Delayed Application of Plate Voltage* for conditions necessitating delay in application of plate voltage until filament has reached operating temperature.

<sup>b</sup> If hot-switching is required in operation, choke-input circuits are recommended. Such circuits limit the hot-switching current to a value no higher than that of the peak plate current. When capacitor-input circuits are used, a maximum value of 3 amperes should not be exceeded.

<sup>c</sup> Indicated values for conditions shown will limit peak plate current to the maximum-rated value. When a filter-input capacitor larger than 20  $\mu$ f is used, it may be necessary to increase plate-supply impedance to a higher value than that shown in the data to limit the peak plate current to the maximum-rated value.

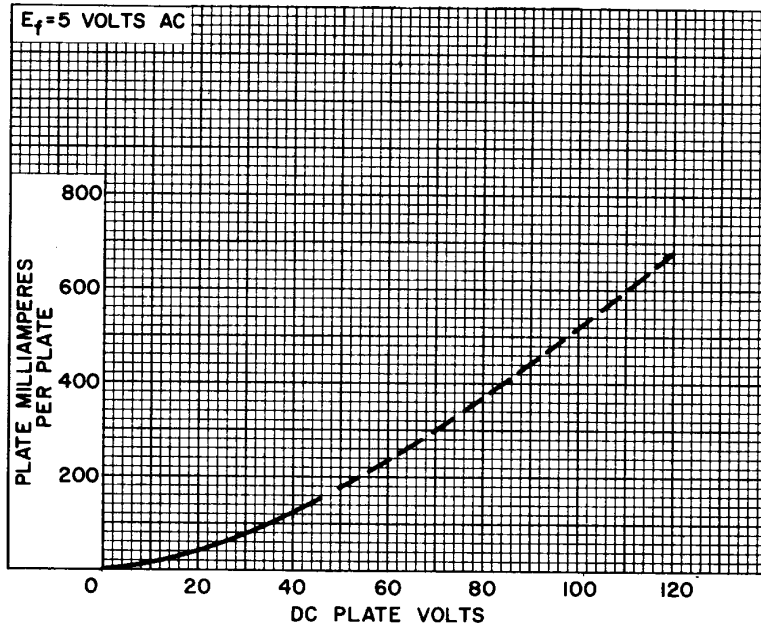


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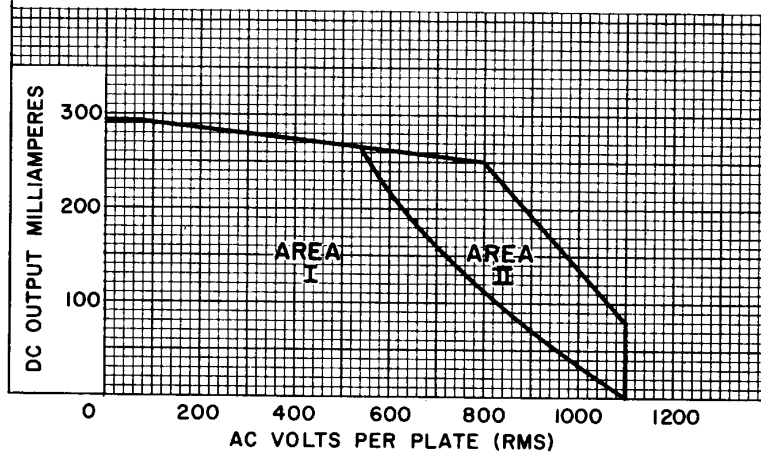
## AVERAGE PLATE CHARACTERISTIC



92CS-11183

## OPERATING AREAS FOR SIMULTANEOUS AND DELAYED APPLICATION OF PLATE VOLTAGE

FULL-WAVE RECTIFIER SERVICE WITH CAPACITOR-INPUT FILTER.  
AREA I—FILAMENT AND PLATE VOLTAGE MAY BE APPLIED SIMULTANEOUSLY.  
AREA II—FILAMENT SHOULD BE ALLOWED TO REACH OPERATING TEMPERATURE BEFORE PLATE VOLTAGE IS APPLIED. FOR AVERAGE CONDITIONS, THE DELAY IS APPROXIMATELY 10 SECONDS.



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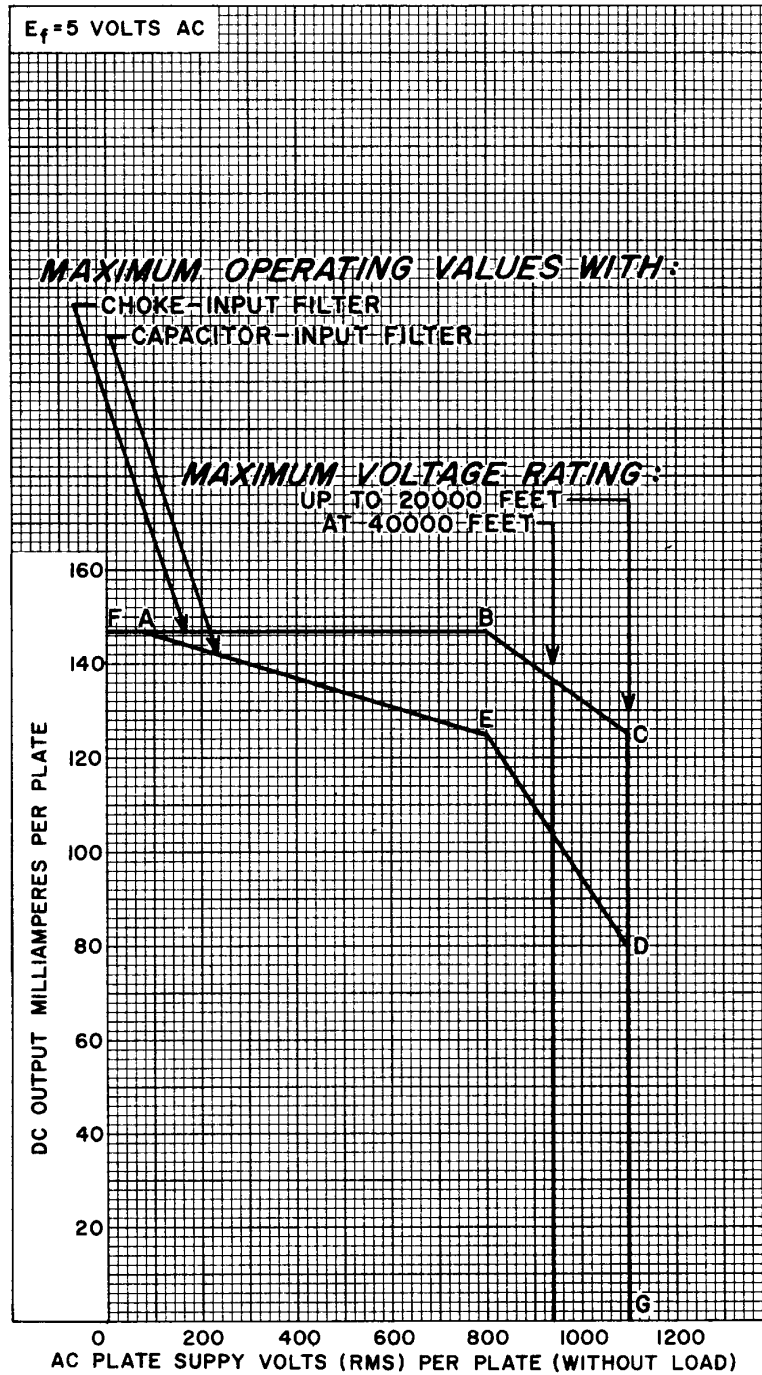
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## RATING CHART I



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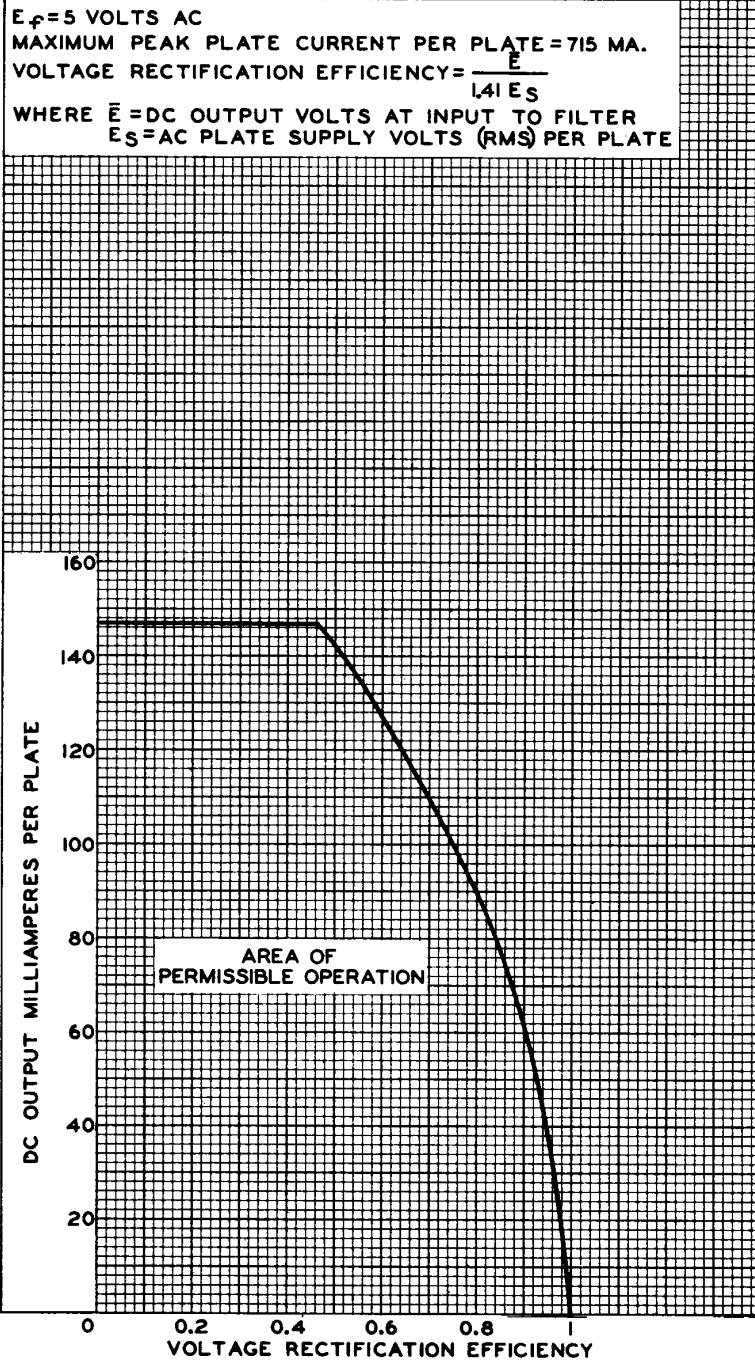


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## RATING CHART II With Capacitor-Input Filter



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## RATING CHART III With Capacitor-Input Filter

$E_f = 5$  VOLTS AC

MAXIMUM HOT-SWITCHING AMPERES = 3

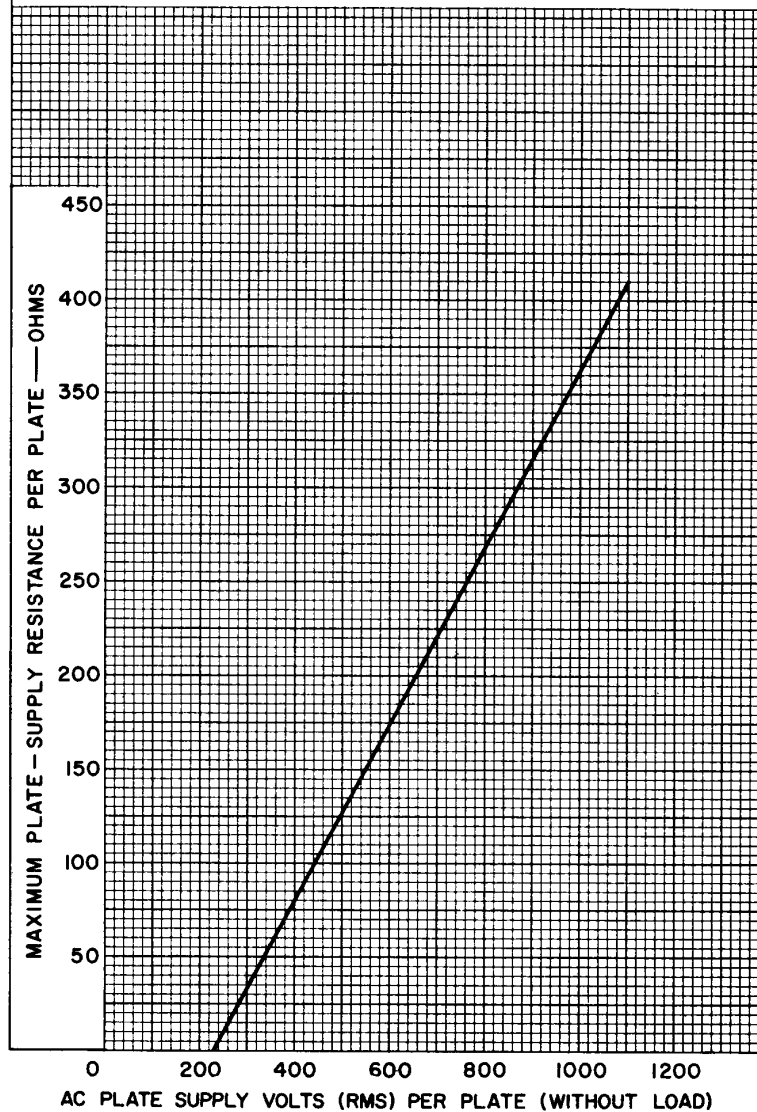
PLATE-SUPPLY RESISTANCE PER PLATE =  $R_{SEC.} + N^2 R_{PRI.} + R_A$

WHERE  $R_{SEC.}$  = DC RESISTANCE OF TRANSFORMER  
SECONDARY PER SECTION

$R_{PRI.}$  = DC RESISTANCE OF TRANSFORMER PRIMARY

$R_A$  = DC RESISTANCE OF ADDED SERIES RESIS-  
TANCE PER PLATE

$N$  = TRANSFORMER-VOLTAGE STEP-UP RATIO  
PER SECTION



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