

Full-Wave Vacuum Rectifier

For Industrial & Military Applications

GENERAL DATA

Electrical:

Filament, Coated:^a

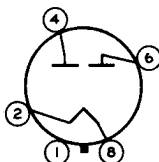
Voltage (AC or DC) 5 volts
Current 2 amp

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
Filter-Input Capacitor.	20	20	20
Total Effective Plate Supply Impedance Per Plate ^c	225	250	375
			ohms



5R4GYB

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

For altitudes up to 40000 20000 feet

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
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125	600	-	volts
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175	-	760	volts
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250	560	-	volts
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Voltage Regulation (Approx.):

Half-load to full-load

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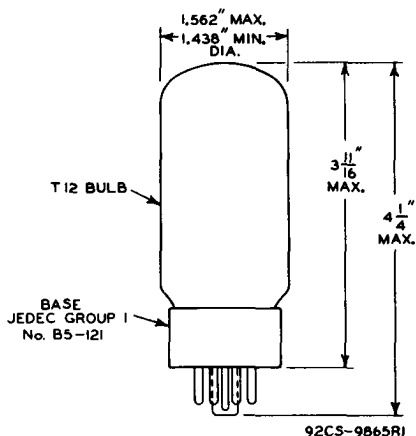
DC Output Current	250	175	ma
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^a See accompanying chart *Operating Areas for Simultaneous and Delayed Application of Plate Voltage* for conditions necessitating delay in application of plate voltage until filament has reached operating temperature.

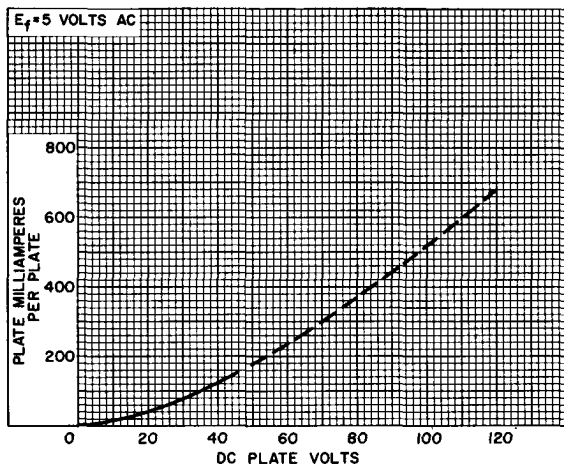
^b If hot-switching is required in operation, choke-input circuits are recommended. Such circuits limit the hot-switching current to a value no higher than that of the peak plate current. When capacitor-input circuits are used, a maximum value of 3 amperes should not be exceeded.

^c Indicated values for conditions shown will limit peak plate current to the maximum-rated value. When a filter-input capacitor larger than 20 μ 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.





AVERAGE PLATE CHARACTERISTIC

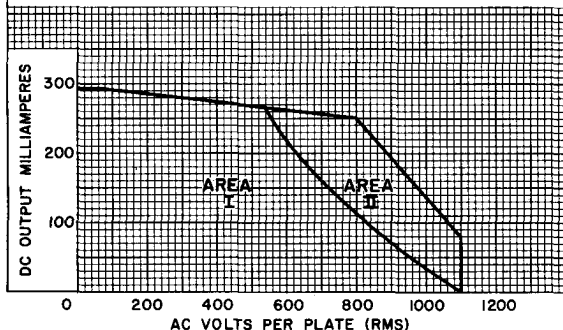


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OPERATING AREAS FOR SIMULTANEOUS AND DELAYED APPLICATION OF PLATE VOLTAGE

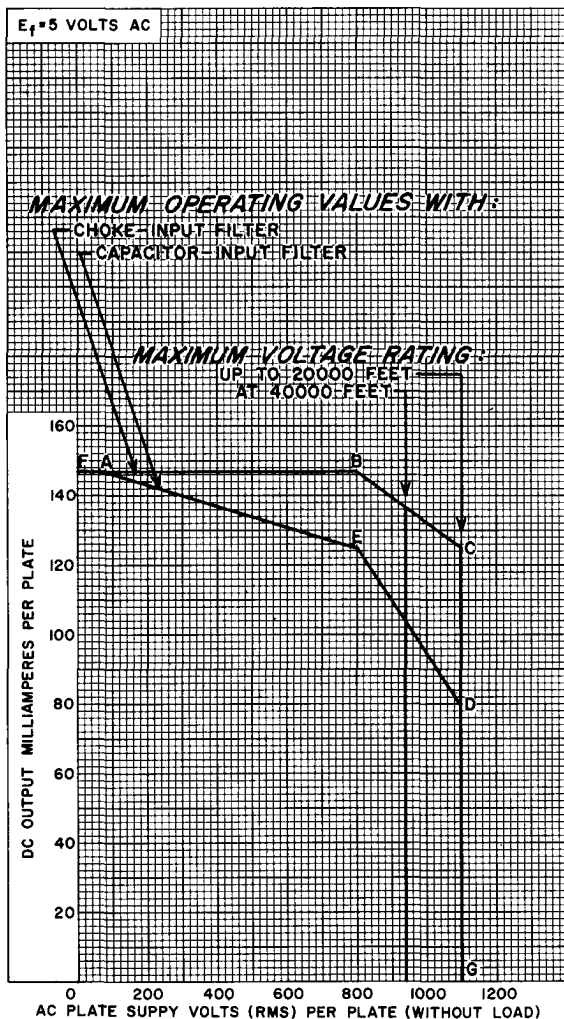
FULL-WAVE RECTIFIER SERVICE WITH CAPACITOR-INPUT FILTER.
 AREA I—FILAMENT AND PLATE VOLTAGE MAY BE APPLIED SIMULTANEOUSLY.

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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RATING CHART I



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RATING CHART II With Capacitor-Input Filter

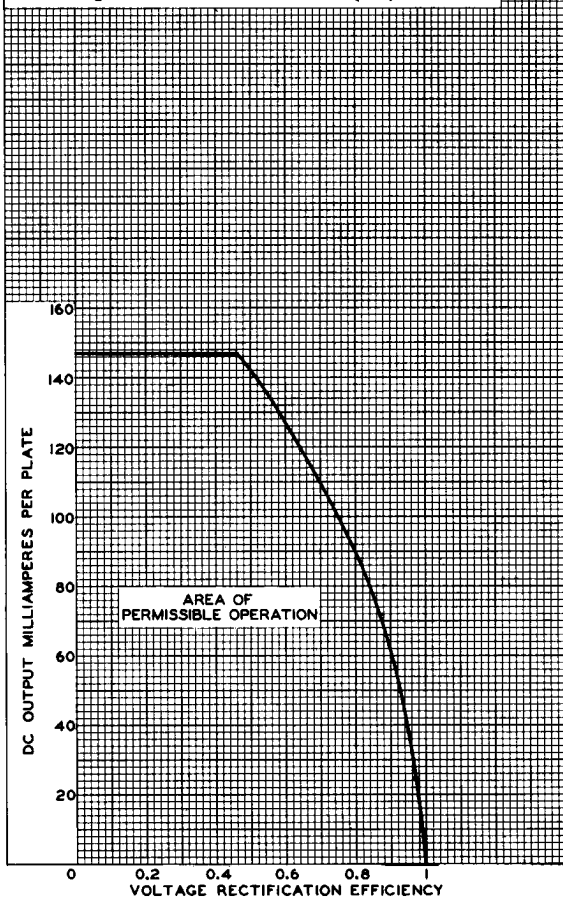
$E_f = 5$ VOLTS AC

MAXIMUM PEAK PLATE CURRENT PER PLATE = 715 MA.

VOLTAGE RECTIFICATION EFFICIENCY = $\frac{\bar{E}}{1.41 E_s}$

WHERE $\bar{E}$ = DC OUTPUT VOLTS AT INPUT TO FILTER

E_s = AC PLATE SUPPLY VOLTS (RMS) PER PLATE



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RATING CHART III

With Capacitor-Input Filter

$E_f = 5$ VOLTS AC

MAXIMUM HOT-SWITCHING AMPERES = 3

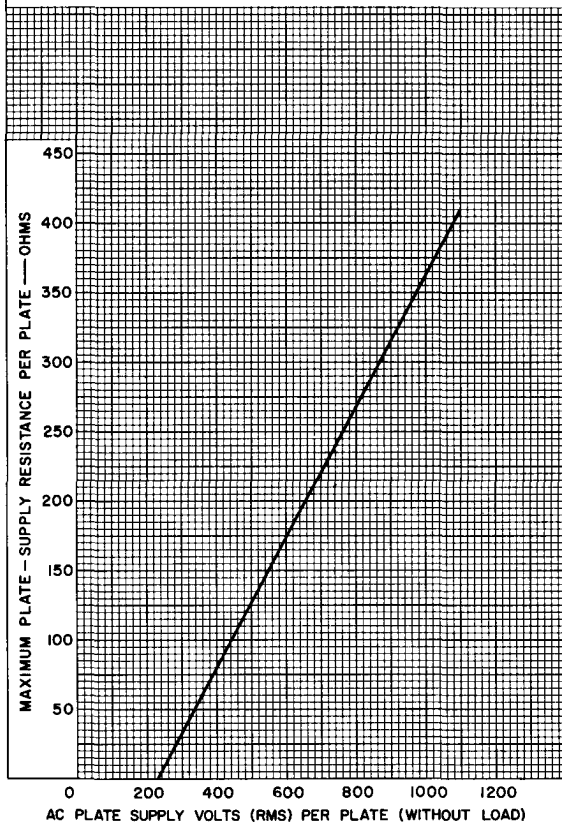
PLATE-SUPPLY RESISTANCE PER PLATE = $R_{SEC.} + N^2 R_{PRI.} + R_A$

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



92CM-6416R4

