5R4GYB

Full-Wave Vacuum Rectifier

For Industrial & Military Applications

GENERAL DATA

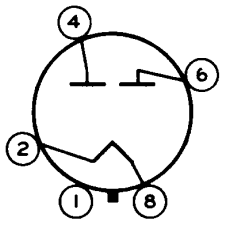
Electrical:

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	volts
Filter-Input Capacitor.	20	20	20	μf
Total Effective Plate Supply Impedance Per Plate[c].	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
DC Output Current	250	150	150	ma

With choke-input filter

For altitudes up to	*40000*	*20000*	*feet*
AC Plate-to-Plate Supply Voltage (RMS, without load) .	1500	1900	volts
Filter-Input Choke.	5	10	henrys
DC Output Voltage (Approx.) at Input to Filter for dc output 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
DC Output Current	250	175	ma

[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 μf 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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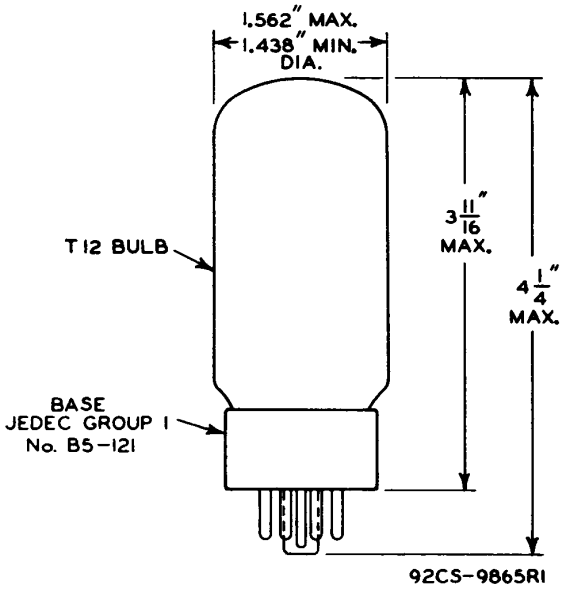
1.562" MAX.
1.438" MIN. DIA.
T12 BULB
3 11/16" MAX.
4 1/4" MAX.
BASE
JEDEC GROUP 1
No. B5-121
92CS-9865RI

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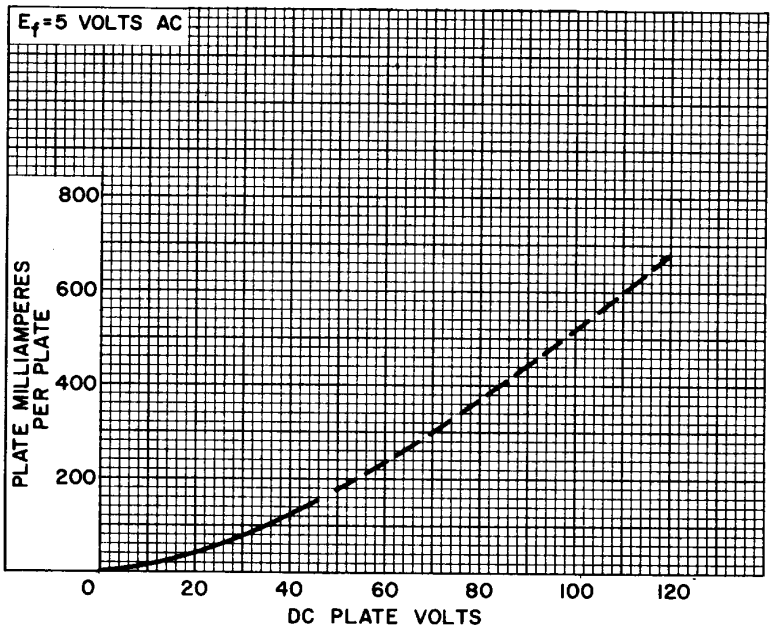
AVERAGE PLATE CHARACTERISTIC



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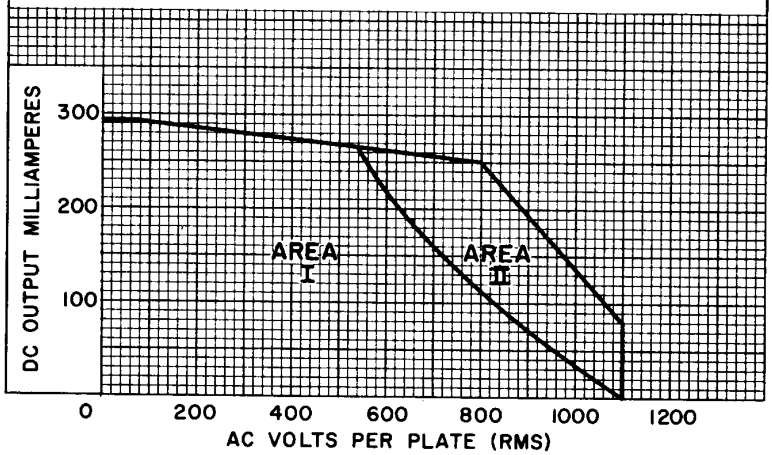
OPERATING AREAS FOR SIMULTANEOUS AND DELAYED APPLICATION OF PLATE VOLTAGE

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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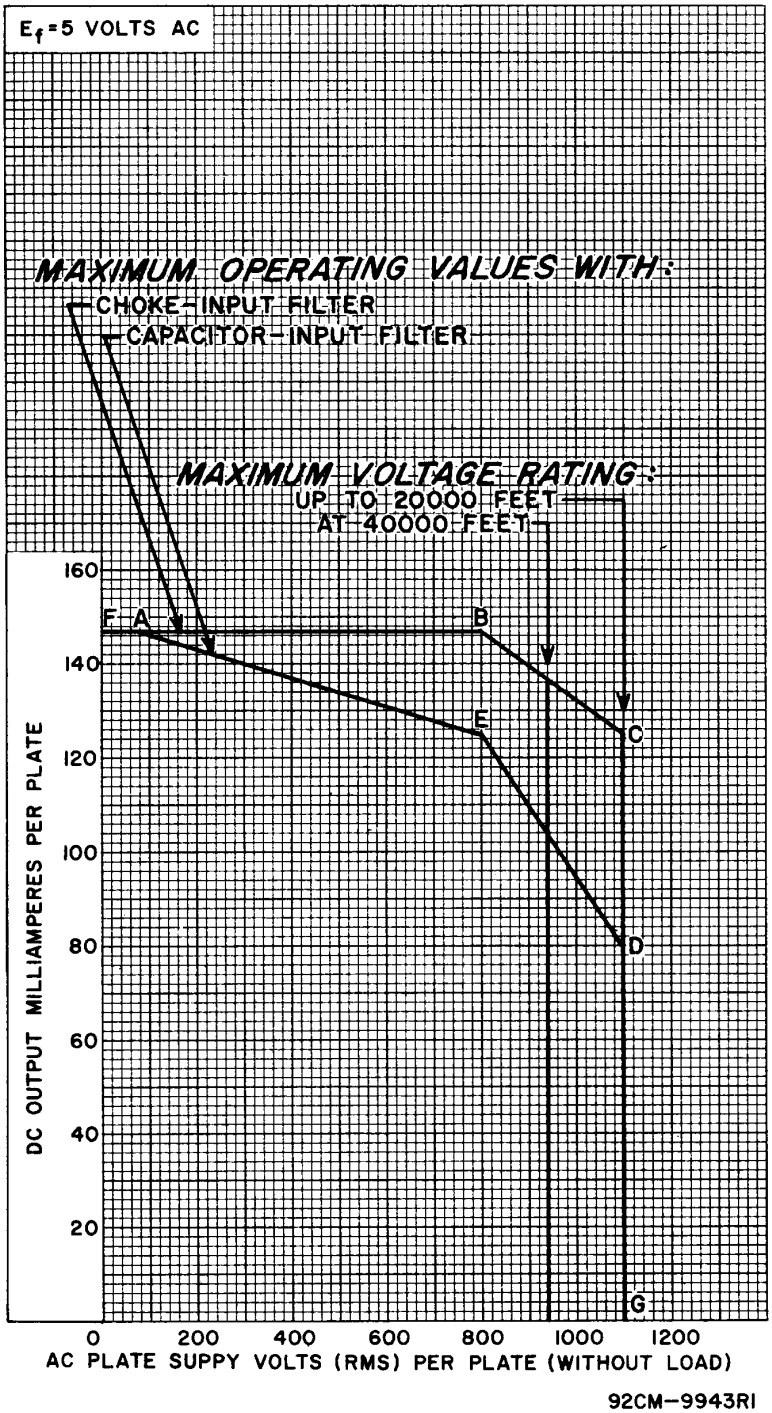
RATING CHART I



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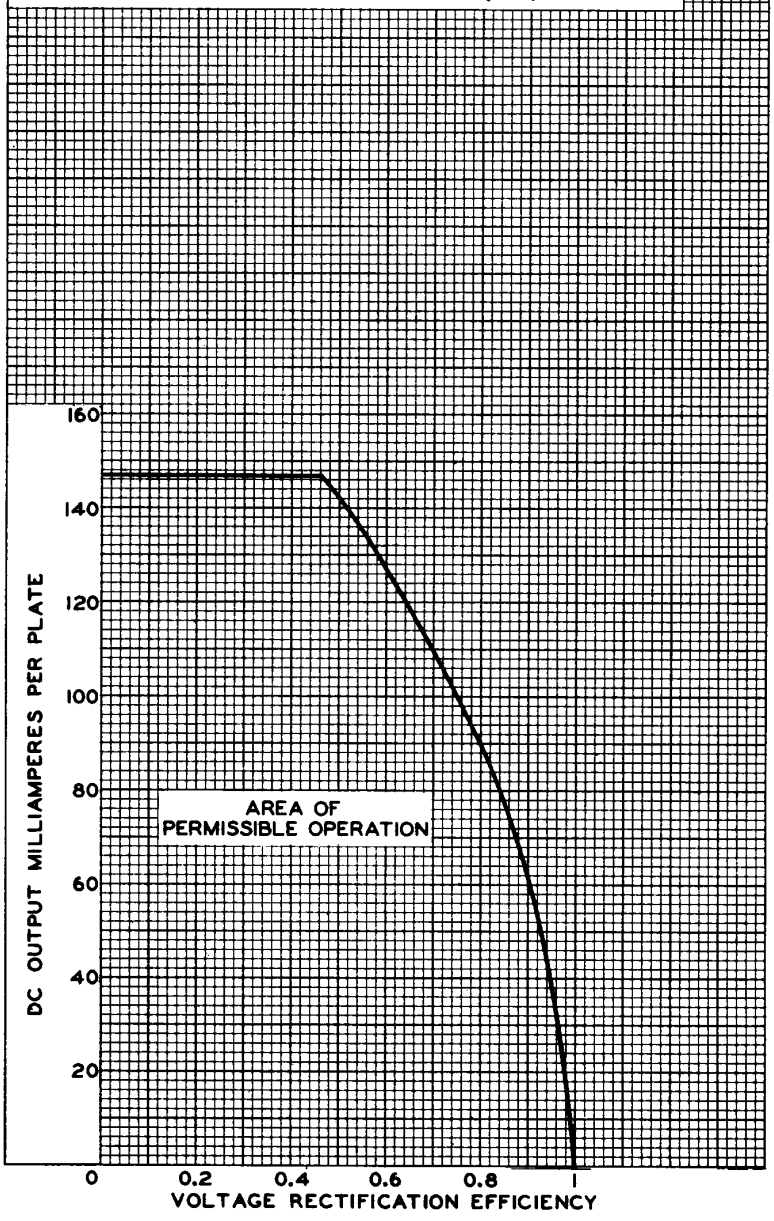
RATING CHART II
With Capacitor-Input Filter

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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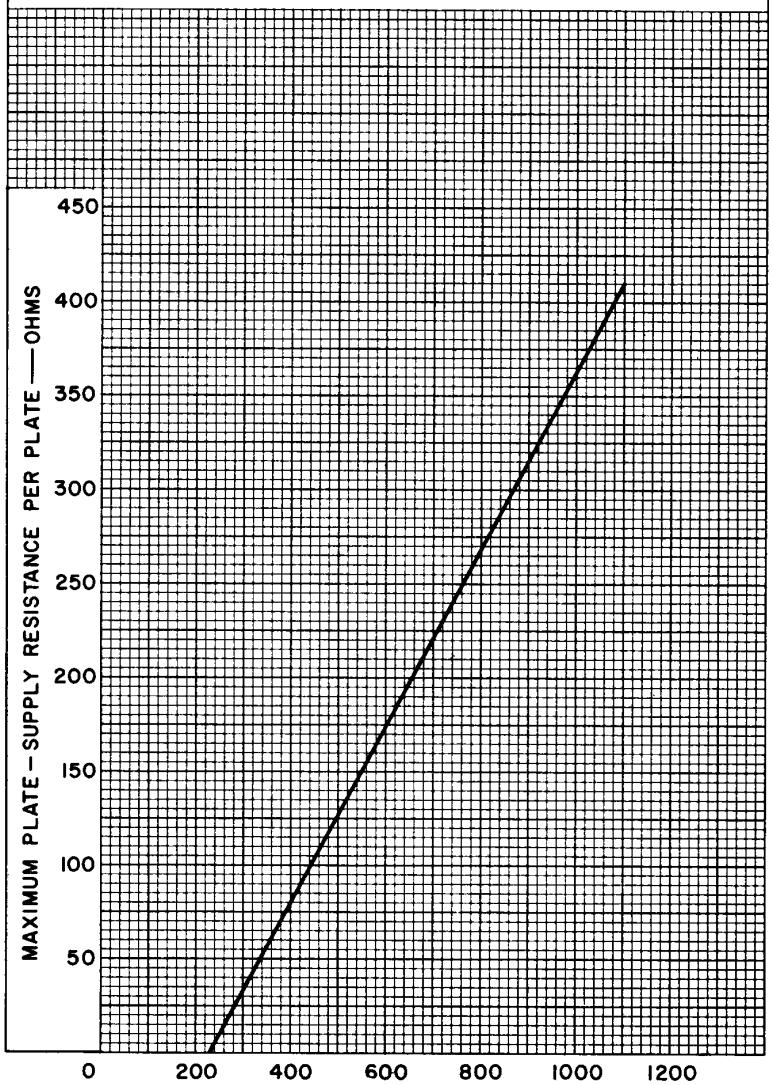
RATING CHART III
With Capacitor-Input Filter

E_f = 5 VOLTS AC
MAXIMUM HOT-SWITCHING AMPERES = 3
PLATE-SUPPLY RESISTANCE PER PLATE = $R_{SEC.} + N^2R_{PRI.} + R_A$
WHERE $R_{SEC.}$ = DC RESISTANCE OF TRANSFORMER SECONDARY PER SECTION
$R_{PRI.}$ = DC RESISTANCE OF TRANSFORMER PRIMARY
R_A = DC RESISTANCE OF ADDED SERIES RESISTANCE PER PLATE
N = TRANSFORMER-VOLTAGE STEP-UP RATIO PER SECTION



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