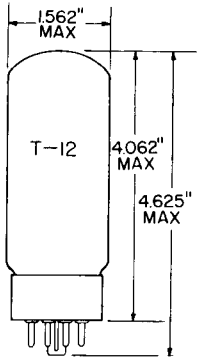
TUNG-SOL

TWIN DIODE



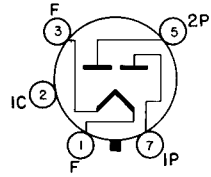
GLASS BULB
SHORT MEDIUM-SHELL
5 PIN OCTAL
B8-110 OR B8-118
OUTLINE DRAWING
JEDEC 12-16

COATED FILAMENT

3.3±0.3 VOLTS 3.8 AMP.
AC OR DC

ANY MOUNTING POSITION

*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.



BOTTOM VIEW
BASING DIAGRAM
JEDEC 5DE

THE 3DG4 IS A TWIN DIODE WITH A DIRECTLY HEATED FILAMENT DESIGNED FOR USE AS A FULL-WAVE RECTIFIER IN THE POWER SUPPLY OF TELEVISION RECEIVERS.

RATINGS

INTERPRETED ACCORDING TO DESIGN MAXIMUM SYSTEM

RECTIFIER SERVICE

MAXIMUM PEAK INVERSE PLATE VOLTAGE	1050	VOLTS
MAXIMUM AC PLATE-SUPPLY VOLTAGE PER PLATE	SEE RATING CHART	
MAXIMUM STEADY-STATE PEAK PLATE CURRENT PER PLATE	1200	MA.
MAXIMUM TRANSIENT PEAK PLATE CURRENT PER PLATE,	SEE RATING CHART	
MAXIMUM DURATION 0.2 SECOND	6.5	AMP.
MAXIMUM DC OUTPUT CURRENT		
BULB TEMPERATURE AT HOTTEST POINT	200	°C

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

FULL-WAVE RECTIFIER

	CAPACITOR-INPUT FILTER	
AC PLATE-SUPPLY VOLTAGE PER PLATE, RMS	275	VOLTS
FILTER INPUT CAPACITOR	40	μF
TOTAL PLATE-SUPPLY RESISTANCE PER PLATE	32	OHMS
DC OUTPUT CURRENT	350	MA.
DC OUTPUT VOLTAGE AT FILTER INPUT	300	VOLTS
TUBE VOLTAGE DROP		
I_b = 350 MA. DC PER PLATE	25	VOLTS

DESIGN-MAXIMUM RATINGS ARE LIMITING VALUES OF OPERATING AND ENVIRONMENTAL CONDITIONS APPLICABLE TO A BOGEY ELECTRON DEVICE OF A SPECIFIED TYPE AS DEFINED BY ITS PUBLISHED DATA, AND SHOULD NOT BE EXCEEDED UNDER THE WORST PROBABLE CONDITIONS. THE DEVICE MANUFACTURER CHOOSES THESE VALUES TO PROVIDE ACCEPTABLE SERVICEABILITY OF THE DEVICE, TAKING RESPONSIBILITY FOR THE EFFECTS OF CHANGES IN OPERATING CONDITIONS DUE TO VARIATIONS IN DEVICE 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 DEVICE 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.

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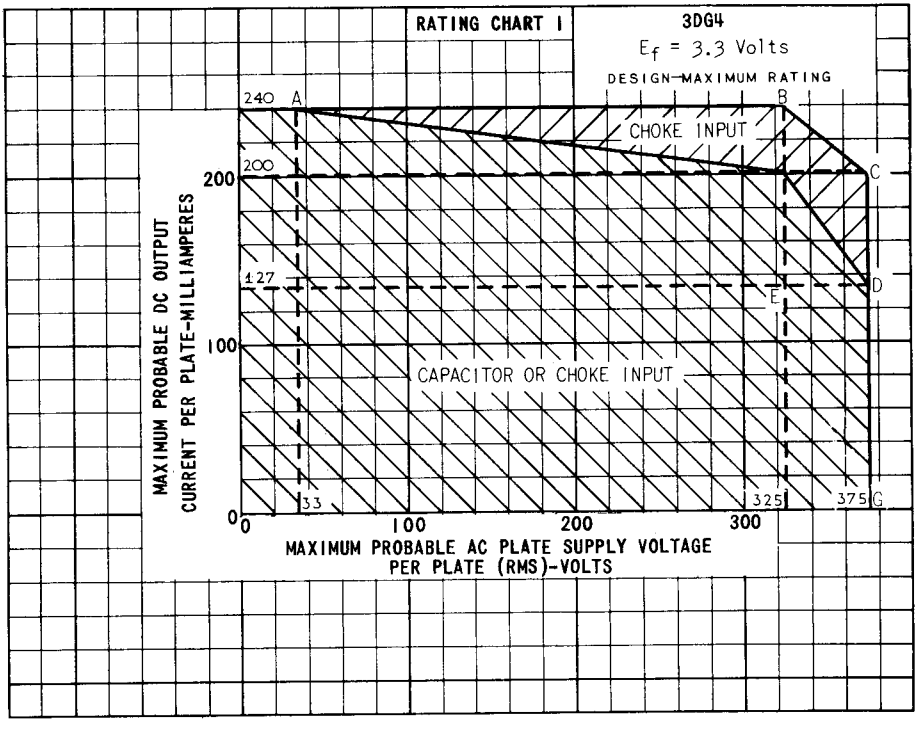
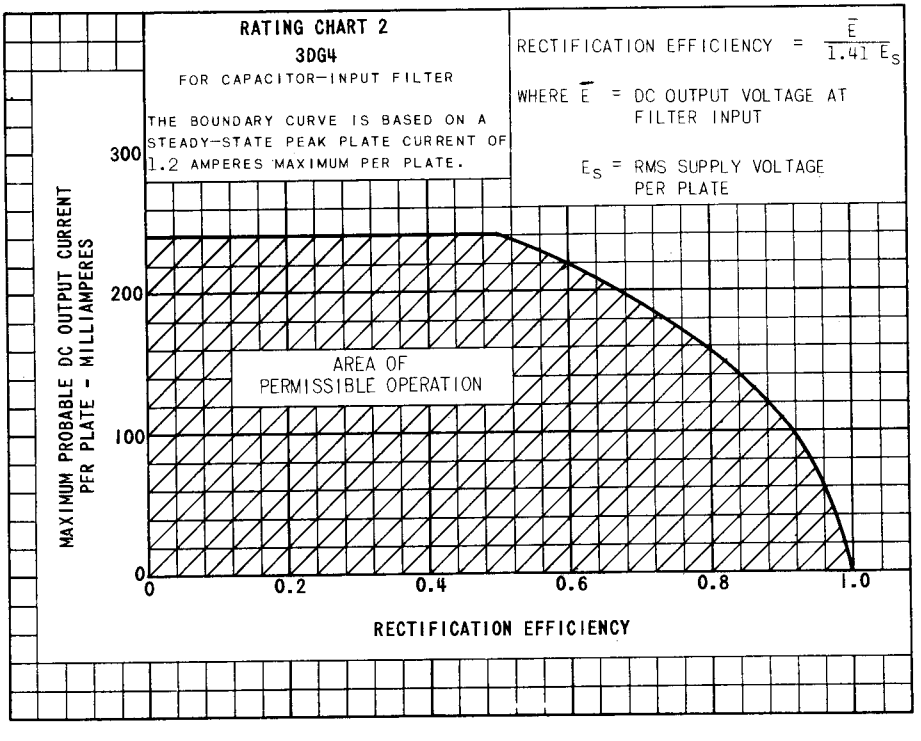

RATING CHART 1
3DG4
E_f = 3.3 Volts
DESIGN-MAXIMUM RATING
240
A
B
CHOKE INPUT
200
C
127
D
E
CAPACITOR OR CHOKE INPUT
100
0
33
325
375
G
0
100
200
300
MAXIMUM PROBABLE DC OUTPUT CURRENT PER PLATE-MILLIAMPERES
MAXIMUM PROBABLE AC PLATE SUPPLY VOLTAGE PER PLATE (RMS)-VOLTS


RATING CHART 2
3DG4
FOR CAPACITOR-INPUT FILTER
THE BOUNDARY CURVE IS BASED ON A STEADY-STATE PEAK PLATE CURRENT OF 1.2 AMPERES MAXIMUM PER PLATE.
RECTIFICATION EFFICIENCY = $\frac{\bar{E}}{1.41\ E_s}$
WHERE $\bar{E}$ = DC OUTPUT VOLTAGE AT FILTER INPUT
E_s = RMS SUPPLY VOLTAGE PER PLATE
300
200
100
0
AREA OF PERMISSIBLE OPERATION
0
0.2
0.4
0.6
0.8
1.0
MAXIMUM PROBABLE DC OUTPUT CURRENT PER PLATE - MILLIAMPERES
RECTIFICATION EFFICIENCY

$R_s = R_{sec} + N^2R_{pri} + R_A$

WHERE

R_s = PLATE SUPPLY RESISTANCE PER PLATE

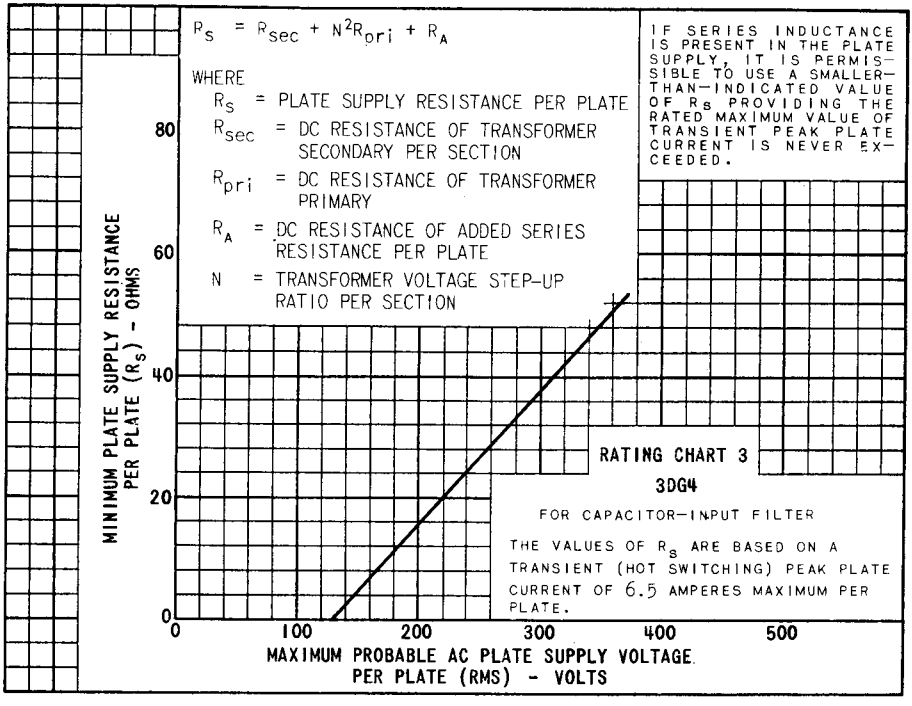
R_{sec} = DC RESISTANCE OF TRANSFORMER SECONDARY PER SECTION

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

IF SERIES INDUCTANCE IS PRESENT IN THE PLATE SUPPLY, IT IS PERMISSIBLE TO USE A SMALLER-THAN-INDICATED VALUE OF R_s PROVIDING THE RATED MAXIMUM VALUE OF TRANSIENT PEAK PLATE CURRENT IS NEVER EXCEEDED.

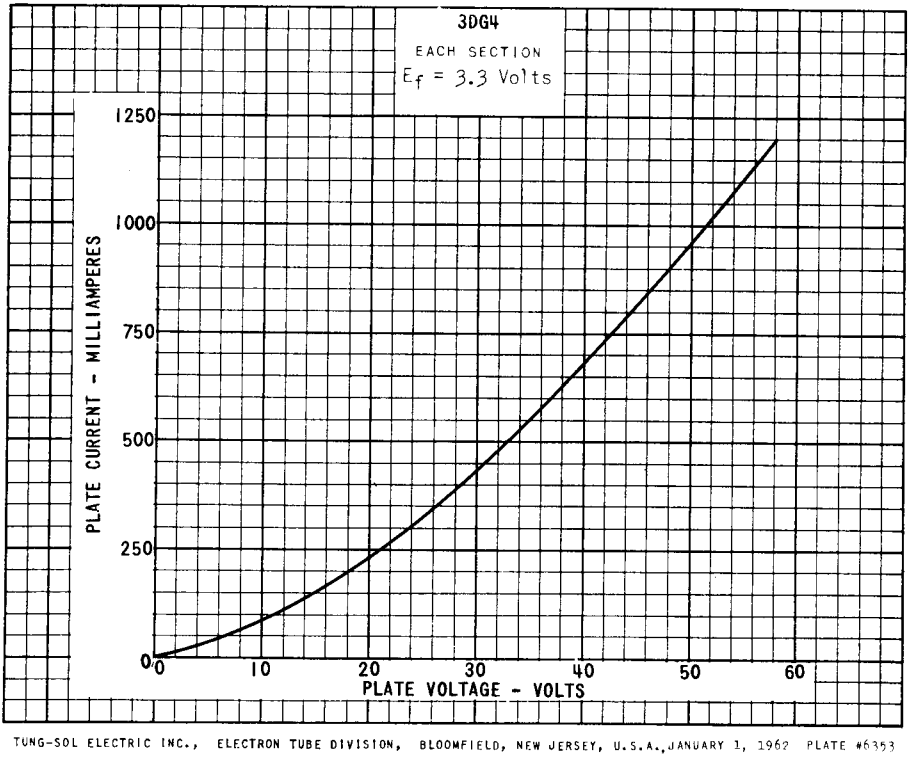


RATING CHART 3

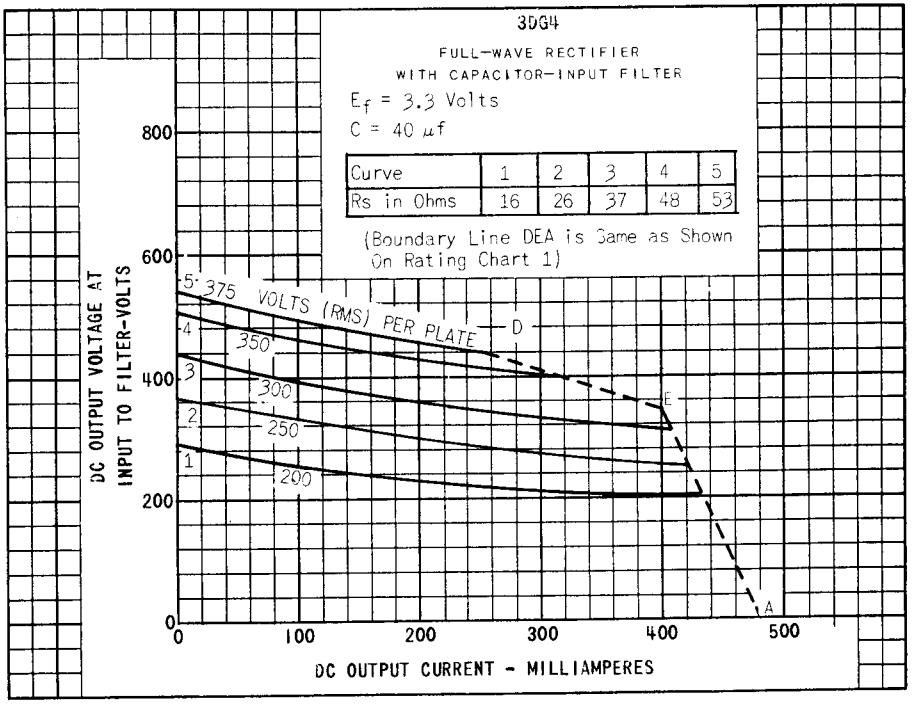
3DG4

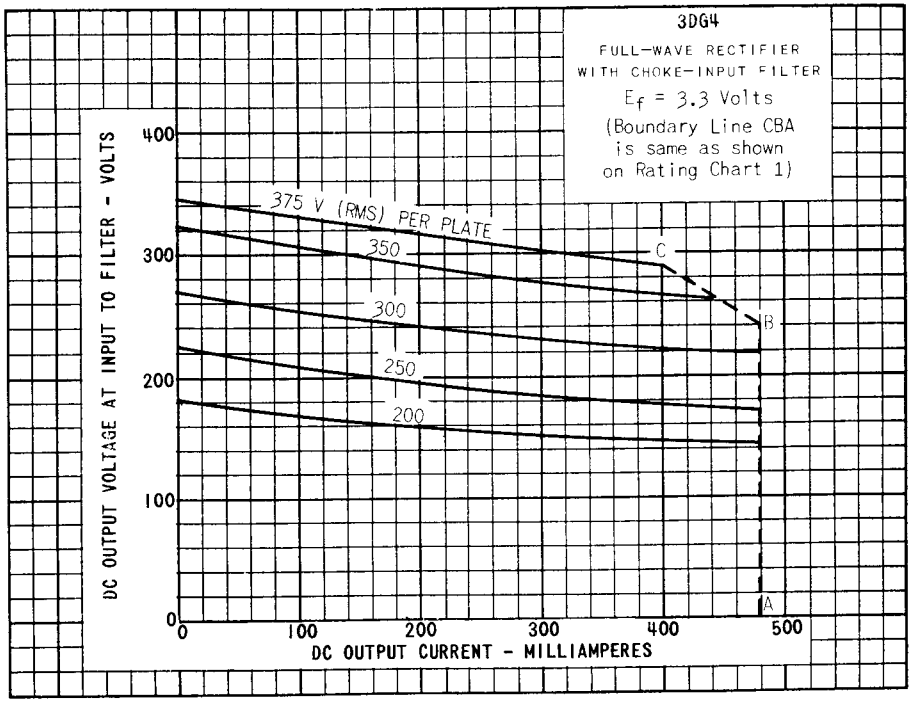
FOR CAPACITOR-INPUT FILTER

THE VALUES OF R_s ARE BASED ON A TRANSIENT (HOT SWITCHING) PEAK PLATE CURRENT OF 6.5 AMPERES MAXIMUM PER PLATE.



3DG4


3DG4
FULL-WAVE RECTIFIER
WITH CAPACITOR-INPUT FILTER
E_f = 3.3 Volts
C = 40 μf
Curve 1 2 3 4 5
Rs in Ohms 16 26 37 48 53
(Boundary Line DEA is Same as Shown On Rating Chart 1)
375 VOLTS (RMS) PER PLATE
350
300
250
200
D
E
A
DC OUTPUT VOLTAGE AT INPUT TO FILTER-VOLTS
DC OUTPUT CURRENT - MILLIAMPERES
0
100
200
300
400
500
600
800


3DG4
FULL-WAVE RECTIFIER
WITH CHOKE-INPUT FILTER
E_f = 3.3 Volts
(Boundary Line CBA is same as shown on Rating Chart 1)
375 V (RMS) PER PLATE
350
300
250
200
C
B
A
DC OUTPUT VOLTAGE AT INPUT TO FILTER - VOLTS
DC OUTPUT CURRENT - MILLIAMPERES
0
100
200
300
400
500