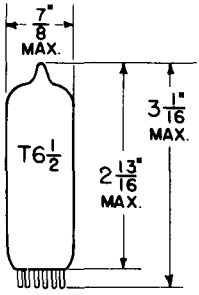
TUNG-SOL

TWIN DIODE

MINIATURE TYPE



GLASS BULB

6-4

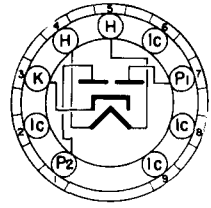
COATED UNIPOTENTIAL CATHODE

HEATER

6.3±10% VOLTS 1.0 AMP.

AC OR DC

ANY MOUNTING POSITION



BOTTOM VIEW

SMALL BUTTON
9 PIN, BASE

9M

THE 6CA4 IS A HEATER-CATHODE TWIN DIODE IN THE 9 PIN MINIATURE CONSTRUCTION. IT IS DESIGNED FOR FULL-WAVE RECTIFIER OPERATION, AND ESPECIALLY SUITABLE FOR COMPACT AMPLIFIER DESIGNS.

RATINGS

INTERPRETED ACCORDING TO DESIGN MAXIMUM SYSTEM

RECTIFIER SERVICE

MAXIMUM PEAK INVERSE PLATE VOLTAGE	1200	VOLTS
MAXIMUM AC PLATE-SUPPLY VOLTAGE PER PLATE	SEE RATING CHART #1	
MAXIMUM STEADY STATE PEAK PLATE CURRENT PER PLATE	500	MA.
MAXIMUM TRANSIENT PEAK PLATE CURRENT PER PLATE, MAXIMUM DURATION 0.2 SECONDS	1.85	AMP.
MAXIMUM DC OUTPUT CURRENT	SEE RATING CHART #1	
MAXIMUM HEATER-CATHODE VOLTAGE: HEATER NEGATIVE WITH RESPECT TO CATHODE	500	VOLTS

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

FULL-WAVE RECTIFIER WITH CAPACITOR-INPUT FILTER

AC PLATE VOLTAGE PER PLATE, RMS	250	300	350	VOLTS
FILTER INPUT CAPACITOR	50	50	50	μf
TOTAL PLATE-SUPPLY RESISTANCE PER PLATE	150	200	240	OHMS
DC OUTPUT CURRENT	150	150	150	MA.
DC OUTPUT VOLTAGE AT FILTER INPUT	245	293	347	VOLTS
TUBE VOLTAGE DROP I_b= 150 MA. DC PER PLATE			20	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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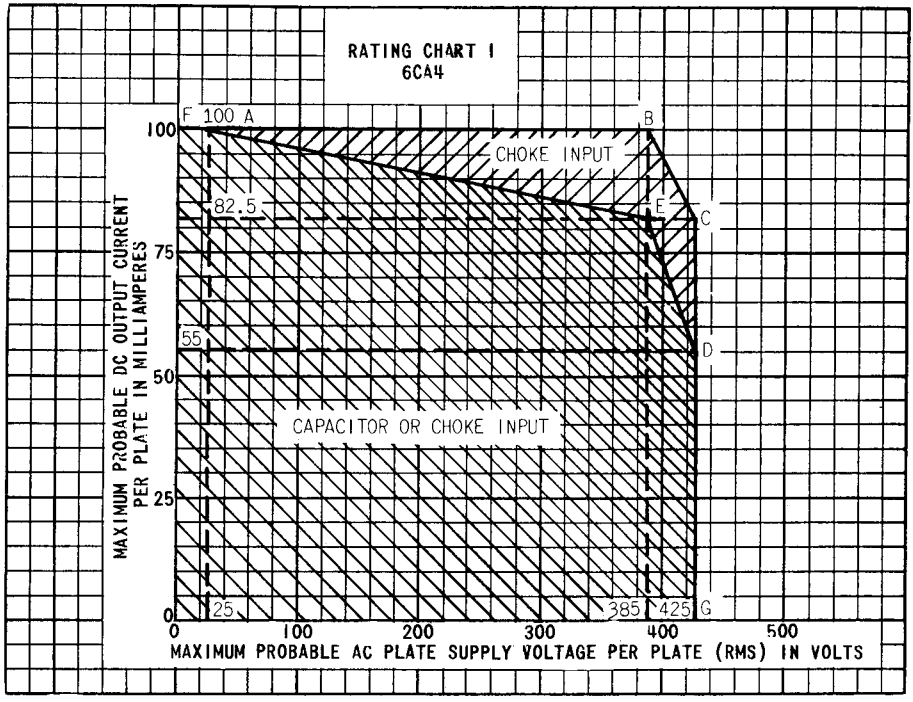
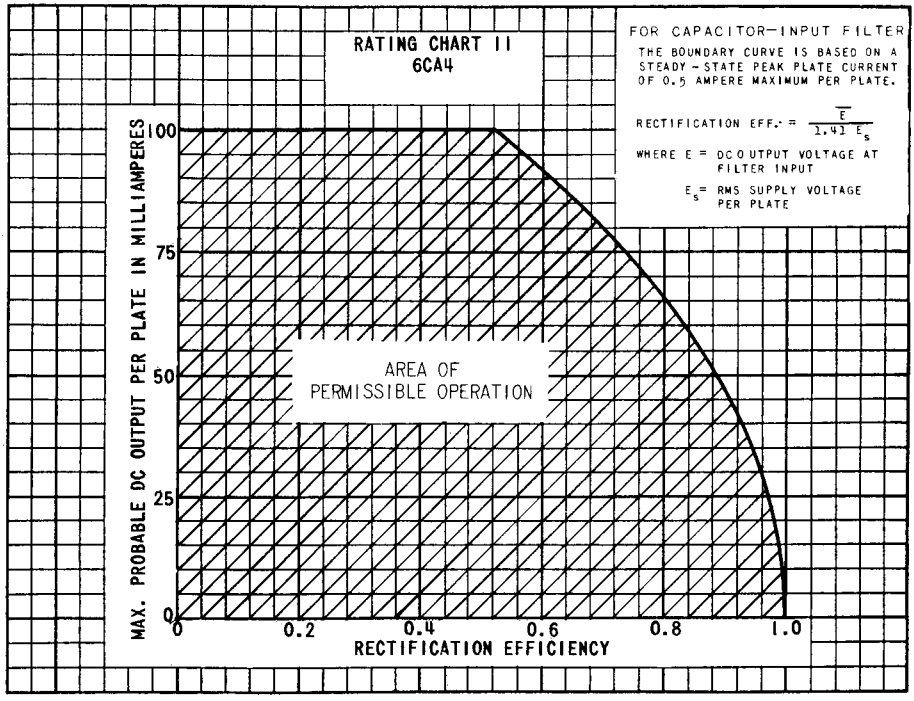
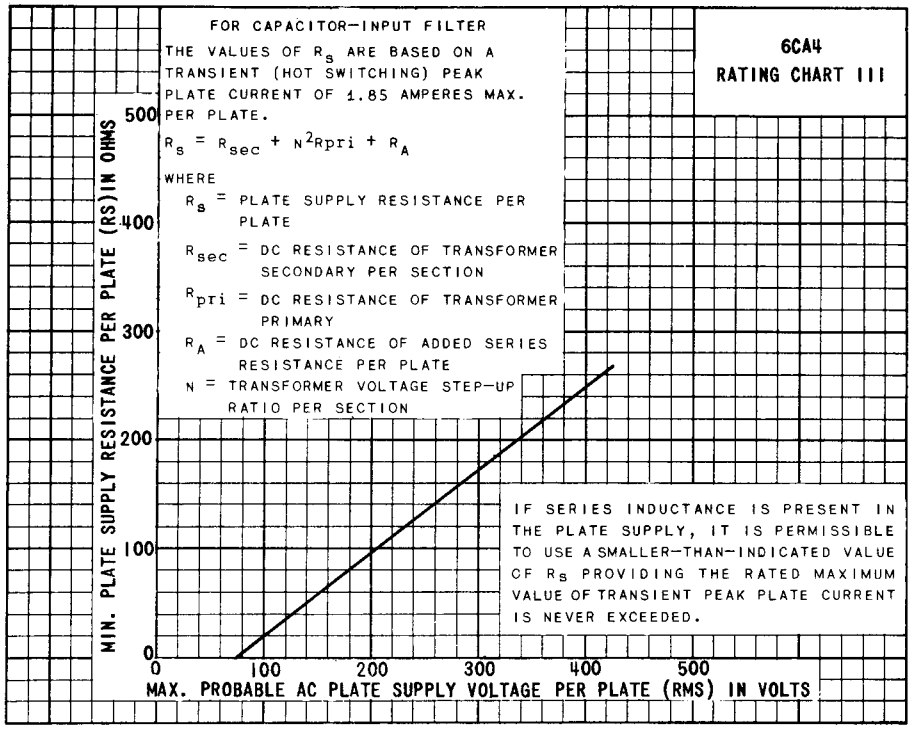
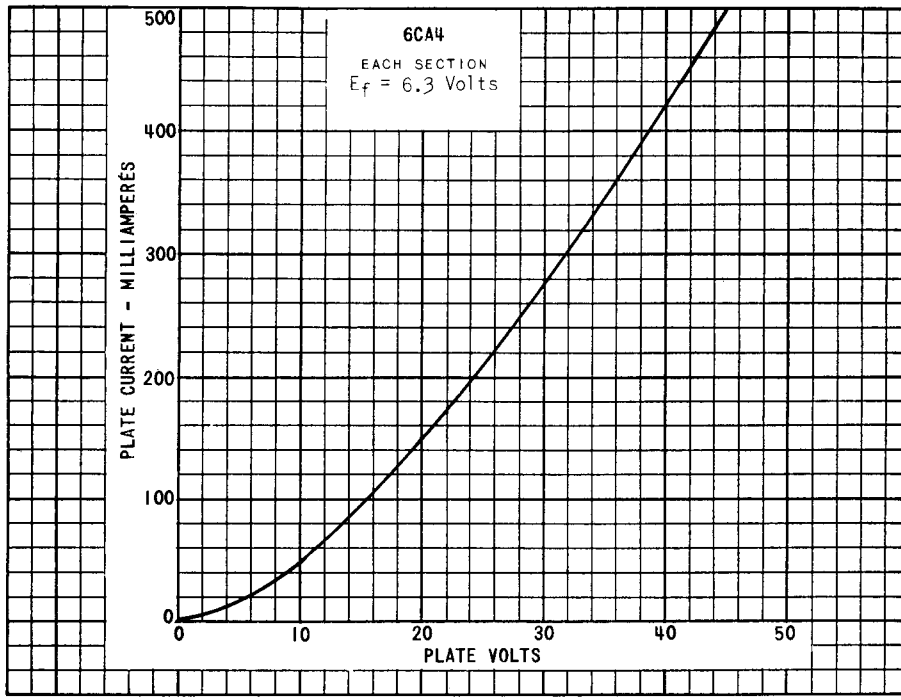
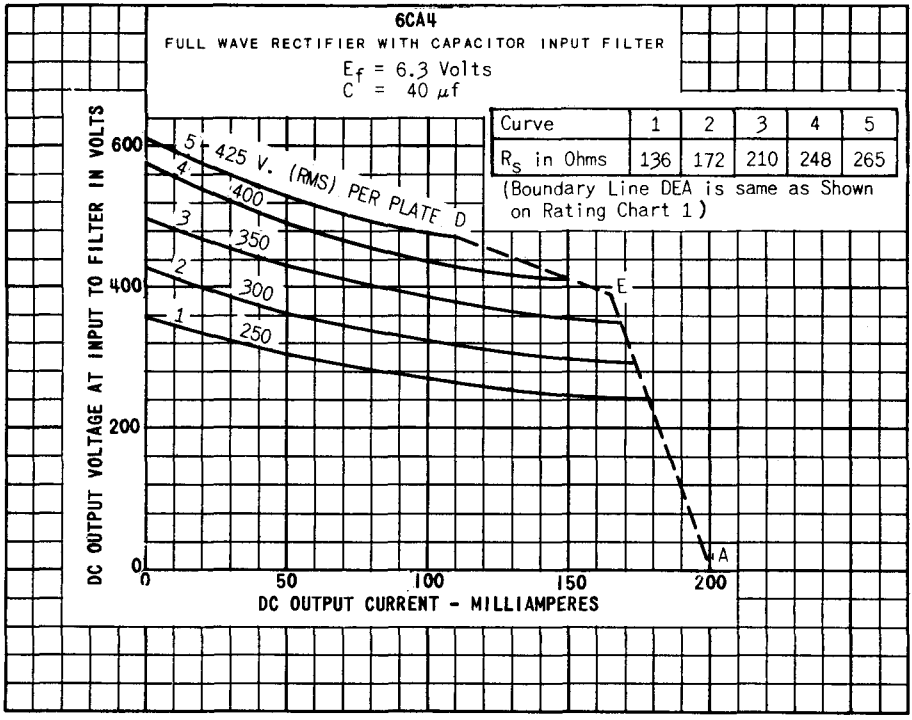
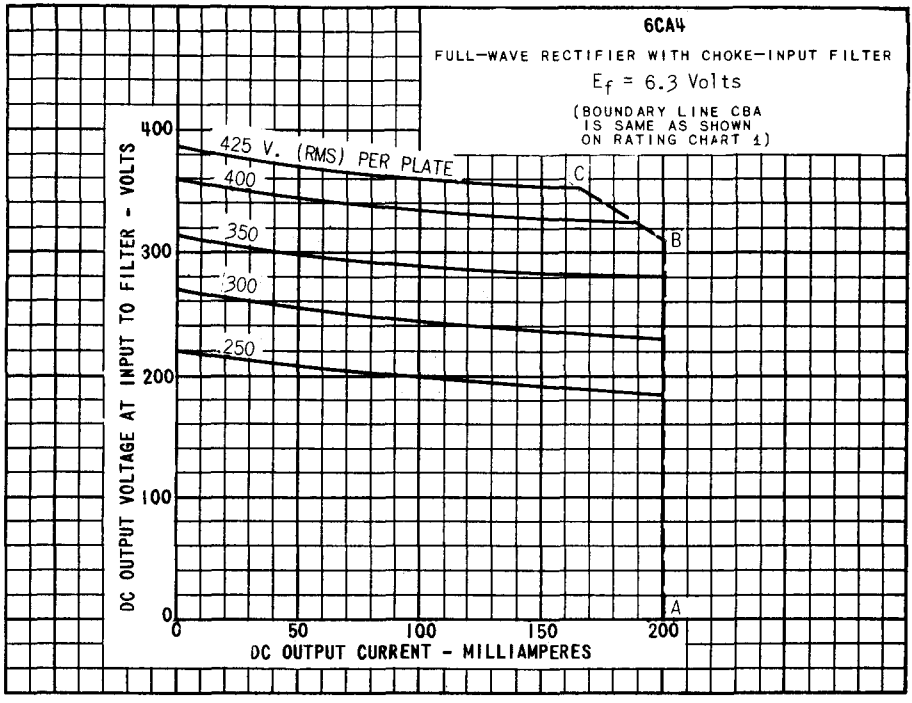

RATING CHART I
6CA4
F 100 A
B
CHOKE INPUT
82.5
E
C
55
D
CAPACITOR OR CHOKE INPUT
25
385
425
G
100
75
50
25
0
0
100
200
300
400
500
MAXIMUM PROBABLE DC OUTPUT CURRENT PER PLATE IN MILLIAMPERES
MAXIMUM PROBABLE AC PLATE SUPPLY VOLTAGE PER PLATE (RMS) IN VOLTS


RATING CHART II
6CA4
FOR CAPACITOR-INPUT FILTER
THE BOUNDARY CURVE IS BASED ON A STEADY-STATE PEAK PLATE CURRENT OF 0.5 AMPERE MAXIMUM PER PLATE.
RECTIFICATION EFF. = $\frac{\overline{E}}{1.41\ E_s}$
WHERE E = DC OUTPUT VOLTAGE AT FILTER INPUT
E_s = RMS SUPPLY VOLTAGE PER PLATE
AREA OF PERMISSIBLE OPERATION
100
75
50
25
0
0
0.2
0.4
0.6
0.8
1.0
MAX. PROBABLE DC OUTPUT PER PLATE IN MILLIAMPERES
RECTIFICATION EFFICIENCY


6CA4
RATING CHART III
FOR CAPACITOR-INPUT FILTER
THE VALUES OF R_s ARE BASED ON A TRANSIENT (HOT SWITCHING) PEAK PLATE CURRENT OF 1.85 AMPERES MAX. PER PLATE.
$R_s = R_{sec} + N^2 R_{pri} + R_A$
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.
MIN. PLATE SUPPLY RESISTANCE PER PLATE (RS) IN OHMS
0
100
200
300
400
500
0
100
200
300
400
500
MAX. PROBABLE AC PLATE SUPPLY VOLTAGE PER PLATE (RMS) IN VOLTS


6CA4
EACH SECTION
E_f = 6.3 Volts
PLATE CURRENT - MILLIAMPERES
0
100
200
300
400
500
0
10
20
30
40
50
PLATE VOLTS


6CA4
FULL WAVE RECTIFIER WITH CAPACITOR INPUT FILTER
Ef = 6.3 Volts
C = 40 μf
Curve 1 2 3 4 5
Rs in Ohms 136 172 210 248 265
(Boundary Line DEA is same as Shown on Rating Chart 1)
425 V. (RMS) PER PLATE
400
350
300
250
D
E
A
DC OUTPUT VOLTAGE AT INPUT TO FILTER IN VOLTS
DC OUTPUT CURRENT - MILLIAMPERES
0
200
400
600
50
100
150
200


6CA4
FULL-WAVE RECTIFIER WITH CHOKE-INPUT FILTER
Ef = 6.3 Volts
(BOUNDARY LINE CBA IS SAME AS SHOWN ON RATING CHART 1)
425 V. (RMS) PER PLATE
400
350
300
250
C
B
A
DC OUTPUT VOLTAGE AT INPUT TO FILTER - VOLTS
DC OUTPUT CURRENT - MILLIAMPERES
0
100
200
300
400
50
100
150
200