

JOINT ELECTRON TUBE ENGINEERING COUNCIL

REGISTRATION

FILE

650 SALMON TOWER
11-WEST-FORTY-SECOND STREET
NEW YORK 36, N.Y.
TELEPHONE: LONGACRE 5-9450



Announcement

of

Electron Device Type Reregistration

Release No. 1323M (Tentative)*

September 15, 1958

The Joint Electron Tube Engineering Council announced the registration of the following electron device designation

5X8

on June 11, 1954, in Release No. 1323, under the sponsorship of Sylvania Electric Products Inc., Emporium, Pennsylvania.

The attached material has been prepared by JTC-5, Committee on Low Power Vacuum Tubes, in accordance with accepted procedures of the Joint Electron Tube Engineering Council. Upon expiration of the thirty days approval period, these data will supersede all previously registered specifications.

*Unless valid objection to this reregistration is lodged with the EIA Engineering Office prior to October 15, 1958, this reregistration will be made and this information will be considered "FINAL" WITHOUT FURTHER NOTICE!

JETEC DATA
 JOINT ELECTRON TUBE ENGINEERING COUNCIL
 COMMITTEE ON LOW POWER VACUUM TUBES

Release No. 1323M
 Type 5X8

JETEC TYPE 5X8

TRIODE PENTODE

MECHANICAL DATA

Coated unipotential cathode
 Outline drawing 6-2 Bulb. T-6-1/2
 Base E9-1 miniature button 9-pin
 Maximum diameter 7/8"
 Maximum overall length 2-3/16"
 Maximum seated height 1-15/16"
 Pin connections Basing 9AK

Pin 1 - Pentode grid #3	Pin 6 - Cathode
Pin 2 - Triode grid	Pin 7 - Pentode grid #1
Pin 3 - Triode plate	Pin 8 - Pentode grid #2
Pin 4 - Heater	Pin 9 - Pentode plate
Pin 5 - Heater	

Mounting position any

ELECTRICAL DATA

<u>Direct Interelectrode Capacitances</u>	<u>With Shield*</u>	<u>Without Shield</u>	
Pentode grid #1 to pentode plate: (Pg1 to Pp) max.	0.06	0.09	μf
Pentode input: Pg1 to (h+K+Pg2+Pg3)	4.8	4.6	μf
Pentode output: Pp to (h+K+Pg2+Pg3)	1.6	0.9	μf
Cathode to heater: (K to h)	6.0**	6.0	μf
Triode grid to triode plate: (Tg to Tp)	1.5	1.5	μf
Triode input: Tg to (h+k)	2.4	2.0	μf
Triode output: Tp to (h+K)	1.0	0.5	μf
Pentode grid #1 to triode plate: (Pg1 to Tp) max.	0.04	0.05	μf
Pentode plate to triode plate: (Pp to Tp) max.	0.008	0.05	μf

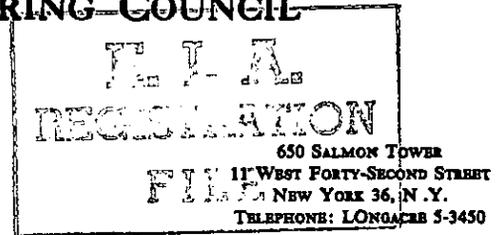
*External shield #315 connected to pin 6
 **External shield #315 connected to pin 9

Heater Characteristics

Heater current (ac or dc)	0.6 ± 6%	ampere
Heater voltage	4.7	volts
Heater warm-up time***	11	seconds

***The time required for the voltage across the heater to reach 80% of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.

JOINT ELECTRON TUBE ENGINEERING COUNCIL



Announcement
of
Electron Device Type Reregistration

Release No. 1323L (Tentative)*

January 27, 1958

The Joint Electron Tube Engineering Council announced the registration of the following JETEC electron device designation

2AF4

on June 11, 1954 in Release No. 1323 under the sponsorship of Sylvania Electric Products Inc., 1740 Broadway, New York 19, N.Y.

The attached material has been prepared by JTC-5, Committee on Receiving Tubes, in accordance with accepted procedures of the Joint Electron Tube Engineering Council. Upon expiration of the thirty days approval period, this data will supersede all previously registered specifications.

*Unless valid objection to this reregistration is lodged with the EIA Engineering Office prior to February 27, 1958, this reregistration will be made and this information will be considered "FINAL" WITHOUT FURTHER NOTICE!

ELECTRICAL DATA (Continued)

Average Characteristics

Plate voltage.	80	volts
Cathode bias resistor.	150	ohms
Amplification factor	13.5	
Plate resistance	2100	ohms
Transconductance	6500	μmhos
Plate current.	17.5	ma

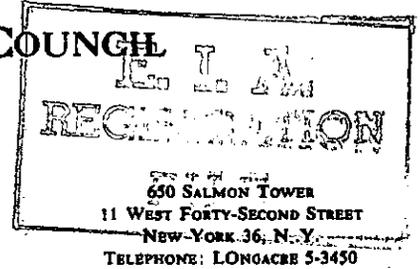
Average Characteristics, UHF Oscillator /

Plate supply voltage	100	volts
Plate resistor	220	ohms
Grid resistor.	10,000	ohms
Plate current.	17.5	ma
Grid current	700	μa
Frequency.	1000	m.c.

Measured in JETEC Standard UHF Oscillator #400.

§Design Maximum Ratings are the limiting values expressed with respect to bogie tubes at which satisfactory tube life can be expected to occur. To obtain satisfactory circuit performance, therefore, the equipment designer must establish the circuit design so that no design-maximum value is exceeded with a bogie tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, and environmental conditions.

JOINT ELECTRON TUBE ENGINEERING COUNCIL



Announcement
of
Electron Device Type Reregistration

Release No. 1323J (Tentative)*

February 18, 1957

The Joint Electron Tube Engineering Council announced the registration of the following JETEC tube type designation

5X4GA

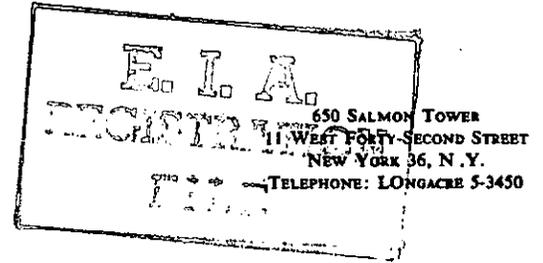
on June 11, 1954 in Release No. 1323 under the sponsorship of Sylvania Electric Products Inc., 1740 Broadway, New York 19, N.Y.

The sponsor now proposes reregistration on the basis of the following modification:

<u>ITEM</u>	<u>AS REGISTERED</u>	<u>AS PROPOSED</u>
JETEC Outline Designation	None	12-16
Maximum Seated Height	4-3/16"	4-1/16"
Maximum Overall Height	4-3/4"	4-5/8"

*Unless valid objection to this reregistration is lodged with the RETMA Engineering Office prior to March 18, 1957, this reregistration will be made and this information will be considered "FINAL" WITHOUT FURTHER NOTICE!

JOINT ELECTRON TUBE ENGINEERING COUNCIL



Announcement
of
Electron Device Type Reregistration

Release No. 1323J (Tentative)*

February 25, 1957

The Joint Electron Tube Engineering Council announced the registration of the following JETEC tube type designation

3BZ6
5X8

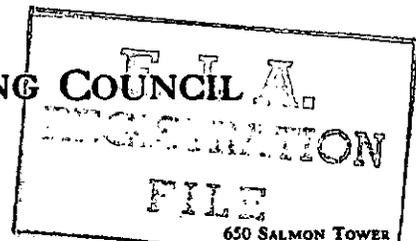
on June 11, 1954 in Release No. 1323 under the sponsorship of Sylvania Electric Products Inc., Emporium, Pennsylvania

The following modification is now proposed for reregistration by JTC-5, Committee on Receiving Tubes:

<u>ITEM</u>	<u>AS PROPOSED</u>	
Heater-Cathode Voltage	<u>3BZ6</u>	<u>5X8</u>
Heater Negative:		
DC	200 volts	
DC + Peak	300	100 volts
Heater Positive:		
DC	100	100 volts
DC + Peak	200	100 volts

*Unless valid objection to this reregistration is lodged with the RETMA Engineering Office prior to March 25, 1957, this reregistration will be made and this information will be considered "FINAL" WITHOUT FURTHER NOTICE!

JOINT ELECTRON TUBE ENGINEERING COUNCIL



650 SALMON TOWER
11 WEST FORTY-SECOND STREET
NEW YORK 36, N. Y.
TELEPHONE: LONGACRE 5-3450



Announcement
of
Electron Device Type Reregistration

Release No. 1323I (Tentative)*

May 14, 1956

The Joint Electron Tube Engineering Council announced the registration of the following JETEC tube type designation

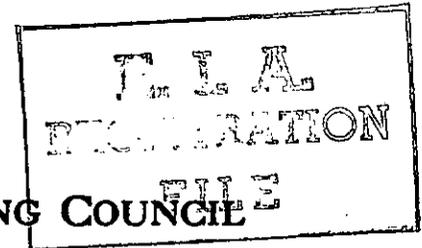
5AN8

on June 11, 1954 in Release No. 1323 under the sponsorship of Sylvania Electric Products Inc., 1740 Broadway, New York 19, N.Y.

The following modification is now proposed by Radio Corporation of America, Harrison, New Jersey:

<u>ITEM</u>	<u>AS REGISTERED</u>	<u>AS PROPOSED</u>
Under AMPLIFIER-Class A ₁ , Maximum Ratings		
<u>Triode Unit</u>		
PLATE DISSIPATION	2.5	2.6 watts

*Unless valid objection to this reregistration is lodged with the RETMA Engineering Office prior to June 14, 1956, this reregistration will be made and this information will be considered "FINAL" WITHOUT FURTHER NOTICE!



JOINT ELECTRON TUBE ENGINEERING COUNCIL



SUITE 1015
300 FIFTH AVENUE
NEW YORK 36, N. Y.
TELEPHONE: LONGACRE 3-3430

Announcement
of
Electron Device Type Reregistration

Release No. 1323H (Tentative)*

June 6, 1955

The Joint Electron Tube Engineering Council announced the registration of the following JETEC tube type designations

5AM8

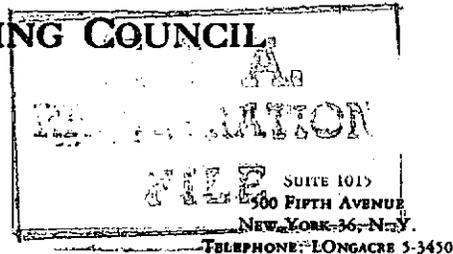
June 11, 1954, in Release No. 1323, under the sponsorship of Sylvania Electric Products Inc., 1740 Broadway, New York 17, New York.

JTC 5, Committee on Receiving Tubes, now proposes reregistration on the basis of the following modification:

<u>Item</u>	<u>As Registered</u>	<u>As Proposed</u>
Diode capacity (cathode to heater, plate) (both shielded and unshielded conditions)	4.0 uuf	3.0 uuf

*Unless valid objection to this reregistration is lodged with the RETMA Engineering Office prior to July 6, 1955, this reregistration will be made and this information will be considered "FINAL WITHOUT FURTHER NOTICE!"

JOINT ELECTRON TUBE ENGINEERING COUNCIL



Announcement
of
Electron Device Type Reregistration

Release No. 1323G
Tentative*

March 14, 1955

The Joint Electron Tube Engineering Council announced the registration of the following JETEC tube type designation

3BZ6

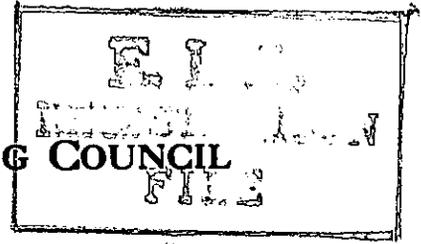
on June 11, 1954, in Release No. 1323, under the sponsorship of Sylvania Electric Products Incorporated, 1740 Broadway, New York 19, New York.

JTC-5, Committee on Receiving Tubes, now proposes reregistration on the basis of the following modifications:

Heater Negative w/respect to Cathode	
Total DC and Peak.....	300 volts
Heater Positive w/respect to Cathode	
DC.....	100 volts
DC and Peak.....	200 volts

*Unless valid objection to this reregistration is lodged with the RETMA Engineering Office prior to April 14, 1955, this reregistration will be made and this information will be considered "FINAL" WITHOUT FURTHER NOTICE!

JOINT ELECTRON TUBE ENGINEERING COUNCIL



501E 1015
500 FIFTH AVENUE
NEW YORK 36, N. Y.
TELEPHONE: LONGACRE 3-3450

C A N C E L L A T I O N

Electron Device Type Reregistration

Release No. 1323F

February 21, 1955

On January 24, 1955 the tube type designations

2T4
2AF4

were proposed for reregistration by Sylvania Electric Products Incorporated, Emporium, Pennsylvania.

We have been requested by the sponsor to cancel this proposed reregistration. Please file this cancellation with the subject release.

JOINT ELECTRON TUBE ENGINEERING COUNCIL



Announcement
of
Electron Device Type Reregistration

Release No. 1323F (Tentative)*

January 24, 1955

The Joint Electron Tube Engineering Council announced the registration of the following JETEC tube type designations

2T4
2AF4

on June 11, 1954, in Release No. 1323, under the sponsorship of Sylvania Electric Products Incorporated, Emporium, Pennsylvania.

The sponsor now proposes reregistration on the basis of the following modifications:

	<u>As Registered</u>	<u>As Proposed</u>
Heater voltage	2.35	2.5 volts
Heater current	0.6	0.6 amps

Add the following condition G to page 2 of the release:

<u>Conditions</u>	<u>Ef</u> <u>Volts</u>	<u>If</u> <u>Amperes</u>	<u>E</u> <u>Volts</u>	<u>R</u> <u>Ohms</u>	<u>V1</u> <u>Volts</u>
G	2.5	0.6	9.9	12.5	2.0

Under the "Conditions" column on page 1 of the release, condition "G" will replace condition "A" for type 2T4 and 2AF4.

*Unless valid objection to this reregistration is lodged with the RETMA Engineering Office prior to February 24, 1955, this reregistration will be made and this information will be considered "FINAL" WITHOUT FURTHER NOTICE!

JOINT ELECTRON TUBE ENGINEERING COUNCIL



SUITE 1015
500 FIFTH AVENUE
NEW YORK 36, N. Y.
TELEPHONE: LONGACRE 5-3450

Announcement
of
Electron Device Type Reregistration

Release No. 1323E (Tentative)*

January 17, 1955

The Joint Electron Tube Engineering Council announced the registration of the following JETEC tube type designations

2AF4	5AM8
2T4	5AN8
3AV6	5X8
3BZ6	6AX7
4BQ7A	12BQ6GTA
4BZ7	

on June 11, 1954, in Release No. 1323, under the sponsorship of Sylvania Electric Products, Incorporated, 1740 Broadway, New York 19, New York.

JTC-5, Committee on Receiving Tubes, now proposes reregistration on the basis of the following modification:

Heater warm-up time.....11 seconds

*Unless valid objection to this reregistration is lodged with the RETMA Engineering Office prior to February 17, 1955, this reregistration will be made and this information will be considered "FINAL" WITHOUT FURTHER NOTICE!

JOINT ELECTRON TUBE ENGINEERING COUNCIL



VIA AIR MAIL
SUITE 1015
500 FIFTH AVENUE
NEW YORK 36, N. Y.
TELEPHONE: LONGACRE 5-3450

Announcement
of
Electron Device Type Reregistration

Release No. 1323D (Final)

December 22, 1954

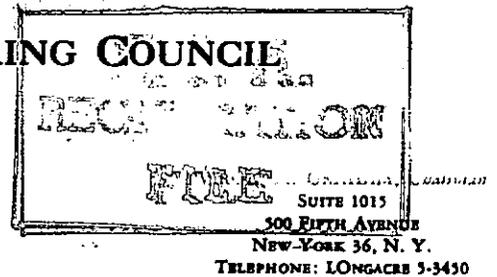
The Joint Electron Tube Engineering Council announced registration of the following JETEC tube type designation

2T4

on June 11, 1954, in Release No. 1323, under the sponsorship of Sylvania Electric Products Inc., 1740 Broadway, New York, N. Y.

Inasmuch as no valid objections have been received during the interim period, the reregistration as proposed in the tentative release is hereby declared "FINAL."

JOINT ELECTRON TUBE ENGINEERING COUNCIL



Announcement
of
Electron Device Type Reregistration

Release No. 1323D (Tentative)

November 22, 1954

On June 11, 1954 the electron device designation 2T⁴ in Release No. 1323, under the sponsorship of Sylvania Electric Products Inc., 1740 Broadway, New York, N. Y., was distributed to industry.

The sponsor now proposes the following reregistration of data:

<u>Item</u>	<u>Maximum Ratings</u>	<u>As Registered</u>
Heater Positive with respect to Cathode: dc		100 volts
Total dc and peak		200 volts
Heater Negative with respect to Cathode: Total dc and peak		200 volts

<u>Item</u>	<u>As Proposed</u>
Peak Heater Cathode Voltage:	
Heater Negative with respect to Cathode	50 max. volts
Heater Positive with respect to Cathode	50* max. volts

*The dc component must not exceed 25 volts.

Unless valid objection to this reregistration is lodged with the RETMA Engineering Office prior to December 22, 1954 this reregistration will be made and this information will be issued marked "FINAL."

JOINT ELECTRON TUBE ENGINEERING COUNCIL



SUITE 1015
500 FIFTH AVENUE
NEW YORK 36, N. Y.
TELEPHONE: LONGACRE 5-3450

Announcement
of
Electron Device Type Reregistration

Release No. 1323^C FINAL

November 25, 1954

The Joint Electron Tube Engineering Council announced registration of the following JETEC tube type designation

2AF4

on June 11, 1954, in Release No. 1323, under the sponsorship of Sylvania Electric Products, Inc., 1740 Broadway, New York 19, New York.

Inasmuch as no valid objections have been received during the interim period, the reregistration as proposed in the tentative release is hereby declared "FINAL."

JOINT ELECTRON TUBE ENGINEERING COUNCIL



SUITE 1015
500 FIFTH AVENUE
NEW YORK 36, N. Y.
TELEPHONE: LONGACRE 5-3450

C O R R E C T I O N

Announcement
of
Electron Device Type Reregistration

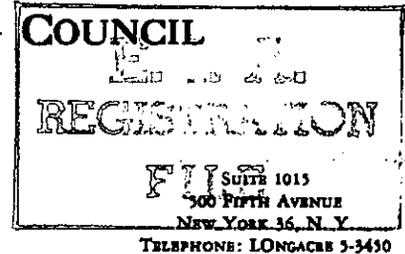
Release No. 1323B (Final)

Type 2AF4

NOTE:

Release 1323B (Final) dated November 25, 1954, should be corrected to read 1323C. Please make this correction on your copy of that release.

JOINT ELECTRON TUBE ENGINEERING COUNCIL



Announcement
of
Electron Device Type Reregistration

Release No. 1323~~B~~ (Tentative)

October 25, 1954

The Joint Electron Tube Engineering Council announce the reregistration of the following JETEC tube type designation

2AF4

on June 11, 1954, in Release No. 1323, under the sponsorship of Sylvania Electric Products, Inc., 1740 Broadway, New York 19, New York.

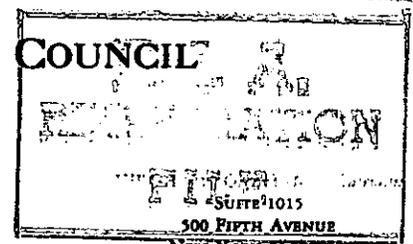
The sponsor now proposes reregistration on the basis of the following modifications:

<u>Item</u>	<u>As Registered</u>	<u>As Proposed</u>
<u>Maximum Ratings:</u>		
Peak Heater-Cathode Voltage:		
Heater negative with respect to cathode	80 max.	50 max. volts
Heater positive with respect to cathode	80 max.	50*max. volts

* The dc component must not exceed 25 volts.

Unless valid objection to this reregistration is lodged with the RETMA Engineering Office prior to November 25, 1954, this reregistration will be made and this information will be issued marked "FINAL."

JOINT ELECTRON TUBE ENGINEERING COUNCIL



TELEPHONE: LONGACRE 5-3450

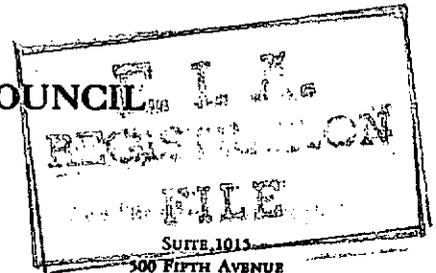
C O R R E C T I O N

Announcement
of
Electron Device Type Reregistration
Release No. 1323B (Tentative)

NOTE:

Release 1323B (tentative) dated October 25, 1954, should be corrected to read 1323C. Please make this correction on your copy of that release.

JOINT ELECTRON TUBE ENGINEERING COUNCIL



300 FIFTH AVENUE
NEW YORK 36, N. Y.
TELEPHONE: LONGACRE 5-3450

Announcement
of
Electron Device Type Reregistration

Release No. 1323B (Tentative)

October 4, 1954

The Joint Electron Tube Engineering Council announced registration of the following JETEC tube type designation

6AX7

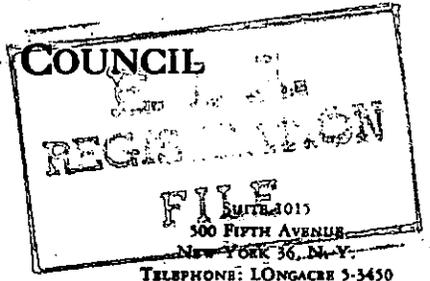
on June 11, 1954, in Release No. 1323, under the sponsorship of Sylvania Electric Products Inc, 1740 Broadway, New York 19, N. Y..

At the request of JTC-5, Committee on Receiving Tubes, the following material is proposed for registration

<u>Commercial Type</u>	<u>Proposed Heater-Cathode Ratings</u>	
	<u>Heater Negative with respect to Cathode Total DC + Peak</u>	<u>Heater Positive with respect of Cathode DC DC + Peak</u>
6AX7	200	100 200

Unless valid objection to this reregistration is lodged with the RETMA Engineering Office prior to November 4, 1954, this reregistration will be made and "FINAL" notice will be distributed.

JOINT ELECTRON TUBE ENGINEERING COUNCIL



Announcement
of
Electron Device Type Reregistration

Release No. 1323A FINAL

October 20, 1954

The Joint Electron Tube Engineering Council announced registration of the following JETEC tube type designations

3AV6 ✓
4BQ7A ✓
4BZ7 ✓

5AN8 ✓
5X8 ✓

on June 11, 1954, in Release No. 1323, under the sponsorship of Sylvania Electric Products Inc., 1740 Broadway, New York 19, N. Y..

Inasmuch as no valid objections have been received during the interim period, the reregistration as proposed in the tentative release is hereby declared "FINAL".

JOINT ELECTRON TUBE ENGINEERING COUNCIL



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300 FIFTH AVENUE
NEW YORK 36, N. Y.
TELEPHONE: LONGACRE 3-3450

Announcement
of
Electron Device Type Reregistration

Release No. 1323A (Tentative)

September 20, 1954

The Joint Electron Tube Engineering Council announced registration of the following JETEC tube type designations

3AV6	5AN8
4BQ7A	5X8
4BZ7	

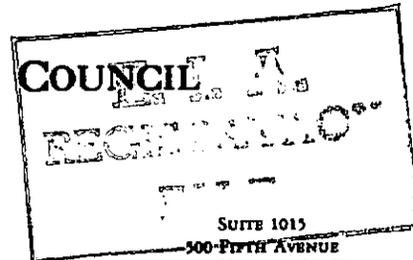
on June 11, 1954, in Release No. 1323, under the sponsorship of Sylvania Electric Products Inc., 1740 Broadway, New York 19, N. Y..

At the request of JTC-5, Committee on Receiving Tubes, the following material is proposed for reregistration

Commercial Type	<u>Proposed Heater-Cathode Ratings</u>			
	<u>Heater Negative with respect to Cathode</u>		<u>Heater Positive with respect of Cathode</u>	
	<u>Total DC + Peak</u>		<u>DC</u>	<u>DC + Peak</u>
5AN8	200	100	200	
4BQ7A	200	100	200	
3AV6	200	100	200	
5X8	200	100	200	
4BZ7	200	100	200	

Unless valid objection to this reregistration is lodged with the RETMA Engineering Office prior to October 20, 1954, this reregistration will be made and "FINAL" Notice will be distributed.

JOINT ELECTRON TUBE ENGINEERING COUNCIL



Announcement
of
Electron Device Type Registration

Release No. 1323 CORRECTION

August 23, 1954

The Joint Electron Tube Engineering Council announced registration of the following JETEC tube type designation

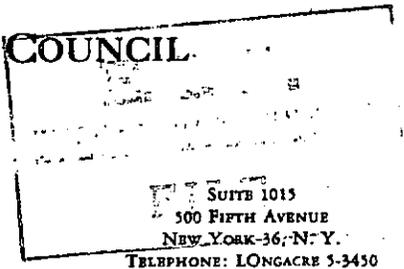
6AX7

on June 11, 1954, in Release No. 1323, under the sponsorship of the Sylvania Electric Products Inc., 1740 Broadway, New York, N. Y.

The sponsor now wishes to effect correction of Release No. 1323 by changing "E/B*" under the "Conditions" column for type 6AX7 to show alphabetical letter "B" without asterisk. This change will indicate the proper conditions to be used in the chart for a parallel connected heater only.

Please record this correction of data.

JOINT ELECTRON TUBE ENGINEERING COUNCIL



Release No. 1323 CORRECTION

June 18, 1954

On Release No. 1323, dated June 11, 1954, fifteen types were announced by the RETMA Data Bureau.

The covering letter erroneously listed the type 12BQ7GTA as being released, whereas the type 12BQ6GTA was intended.

The proper specifications were included with that release for the type 12BQ6GTA.

Please file this correction with Release No. 1323.

These types were sponsored by Sylvania Electric Products inc., 1740 Broadway, New York 19, New York.

JOINT ELECTRON TUBE ENGINEERING COUNCIL



VIRGIL M. GRAHAM, *Chairman*
SUITE 1015
300 FIFTH AVENUE
NEW YORK 36, N. Y.
TELEPHONE: LONGACRE 3-3450

E. I. A.
REGISTRATION
FILE

Release No. 1323

June 11, 1954

To Tube Engineers:

The Joint Electron Tube Engineering Council announces the registration of the following tube type designations

2AF4 ✓	4BQ7A ✓	5X8 ✓	5Y3GA ✓
2T4 ✓	4BZ7 ✓	6AX7 ✓	5Y4GA ✓
3AV6 ✓	5AM8 ✓	12BQ7GTA ✓	50C6GA ✓
3BZ6 ✓	5AN8 ✓	5X4GA ✓	

according to the ratings and characteristics found in the enclosed data sheets on the application of

Sylvania Electric Products Inc.
1740 Broadway
New York 19, New York

Very truly yours,

Virgil M. Graham
Virgil M. Graham, Associate Director
RETMA Engineering Department



engineering data service

SYLVANIA

600 MA
TYPES

TV SERIES
STRING

ADVANCE DATA

APPLICATION DATA

The following receiving types have been designed for application in television receivers employing series connected heaters. A single heater string including the picture tube can be used, since all of the types listed are rated at a heater current of 600 milliamperes.

When these types are employed in a series string, heater voltage-surges across any individual tube are minimized, and a corresponding reduction in heater failures can be achieved.

Specification of heavier heater wire reduces any tendency for early life heater burn-outs. In addition, accurate controls of heater coating contribute toward a more consistent level of heater warm-up time. This, in turn, provides protection such that surge voltages will not exceed rated heater voltage by more than fifty percent.

ELECTRICAL DATA

<u>RETMA Designation</u>	<u>Heater Volts</u>	<u>Heater Amperes</u>	<u>Approximate Heater Warm-Up Time Seconds</u>	<u>Conditions</u>	<u>Equivalent Type</u>	<u>RETMA Release</u>
2AF4	2.35	0.6	10.0	A	6AF4	979
2T4	2.35	0.6	10.0	A	6T4	1122
3AV6	3.15	0.6	10.0	B	6AV6	574
3BZ6	3.15	0.6	10.0	B	6BZ6	1300
4BQ7A	4.2	0.6	10.0	C	6BQ7A	1121
4BZ7	4.2	0.6	10.0	C	6BZ7	1116
5AM8	4.7	0.6	10.0	D	6AM8	1244
5AN8	4.7	0.6	10.0	D	6AN8	1269
5X8	4.7	0.6	10.0	D	6X8	957
6AX7	6.3/3.15*	0.3/0.6*	10.0	E/B*	12AX7	606
12BQ6GTA	12.6	0.6	10.0	F	6BQ6GTA	1305

NOTE:

* This tube has a center-tapped heater. The first condition is for series heater connection and the second condition is for parallel heater connection.

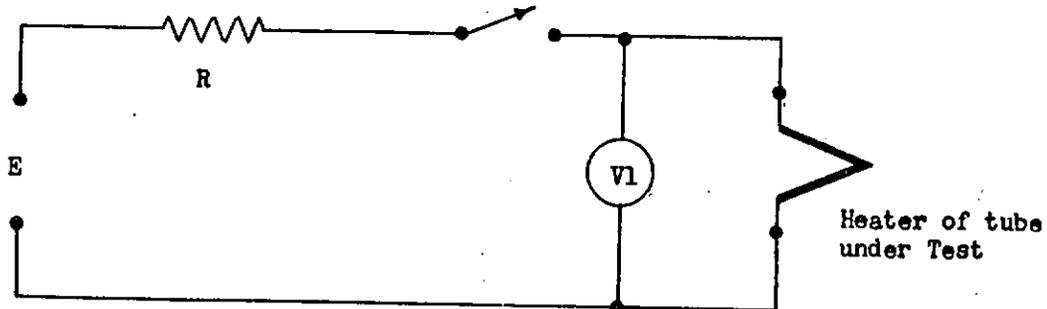
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June 8, 1954

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HEATER WARM-UP TIME MEASUREMENTS

Heater warm-up time is defined as the time required in the circuit shown below for the voltage across the heater terminals to increase from zero to the heater test voltage (V_1). The conditions used in conjunction with the test circuit depend upon the rated heater voltage and current of the tube under test as indicated in the table which follows.



E- Applied Voltage, RMS or DC
R- Total Series Resistance
V1- Heater Test Voltage, RMS or DC

Ef- Rated Heater Voltage of Tube under Test
If- Rated Heater Current of Tube under Test

Condition	Ef Volts	If Amperes	E Volts	R Ohms	V1 Volts
A	2.35	0.6	9.4	11.8	1.9
B	3.15	0.6	12.5	15.8	2.5
C	4.2	0.6	16.7	21.0	3.33
D	4.7	0.6	18.8	23.6	3.75
E	6.3	0.6	25	31.5	5.0
F	12.6	0.6	50	63	10.0

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(ADVANCE DATA)

MECHANICAL DATA

Bulb	T-12, Glass
Base	B8-118, Short Medium Shell Octal 8-Pin
Basing	5Q
Cathode	Coated Filament
Mounting Position ¹	Vertical

ELECTRICAL DATA

FILAMENT CHARACTERISTICS

Filament Voltage, A C or D C	5.0 Volts
Filament Current	3.0 Amperes

RATINGS (Design Center Values) ²

Rectifier Service ³

Peak Inverse Plate Voltage	1550 Volts	Max.
A C Plate Supply Voltage Per Plate, RMS (See Rating Chart I)	550 Volts	Max.
D C Output Current	See Rating Chart I	
Steady State Peak Plate Current Per Plate (See Rating Chart II)	900 Ma	Max.
Transient Peak Plate Current Per Plate (See Rating Chart III)	4.3 Amperes	Max.

AVERAGE CHARACTERISTICS

Tube Voltage Drop		
Tube Conducting:	225 Ma	44 Volts
	250 Ma	47 Volts
	275 Ma	50 Volts

TYPICAL OPERATION

Full Wave Rectifier - Capacitor Input Filter

A C Plate Supply Voltage Per Plate, RMS	300	450 Volts
Filter Input Capacitor	40	40 uf
Total Plate-Supply Resistance Per Plate	25	75 Ohms
D C Output Current	275	250 Ma
D C Output Voltage at Filter Input	290	460 Volts

Full Wave Rectifier - Choke Input Filter

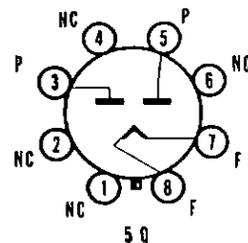
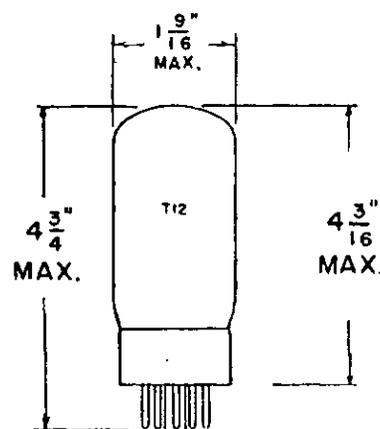
A C Plate Supply Voltage Per Plate, RMS	550 Volts
Filter Input Choke	10 Henrys
D C Output Current	250 Ma
D C Output Voltage at Filter Input	440 Volts

NOTES:

- Horizontal Operation is permitted if Pins 1 and 4 are in a vertical plane.
- See "Interpretation of Rating Charts".
- For use with sinusoidal supply voltages within the frequency range of 25 to 1000 cps.

QUICK REFERENCE DATA

The Sylvania Type 5X4GA is a filamentary, full-wave, high vacuum rectifier designed for service in the power supply of television receivers or other equipment requiring high current. The 5X4GA employs a T-12 envelope and features a higher output current than the 5X4G. Except for basing it is identical to the Type 5U4GB.



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5X4GA

INTERPRETATION OF RATING CHARTS

Rating Charts I, II and III represent boundary conditions beyond which operation of the Sylvania Type 5X4GA is not permitted. With the aid of simple laboratory measurements and the use of the three Charts, any application may be analyzed for proper rectifier type operation.

The boundaries of Rating Chart I are based on constant plate dissipation. These boundaries differ, depending upon the type of filter used. With capacitor input, operation is confined to the area bounded by FAEDG while for choke input, the entire area bounded by FABCDG may be used.

The boundary of Rating Chart II represents a line of constant steady-state peak current. Operation within the boundary is permitted.

Rating Chart III defines the minimum value of effective plate supply resistance, per plate, for any given plate voltage supply which will assure that the surge currents are within a safe value.

For any application, each Chart should be consulted. On all Charts the points of operation should fall within the proper boundaries.

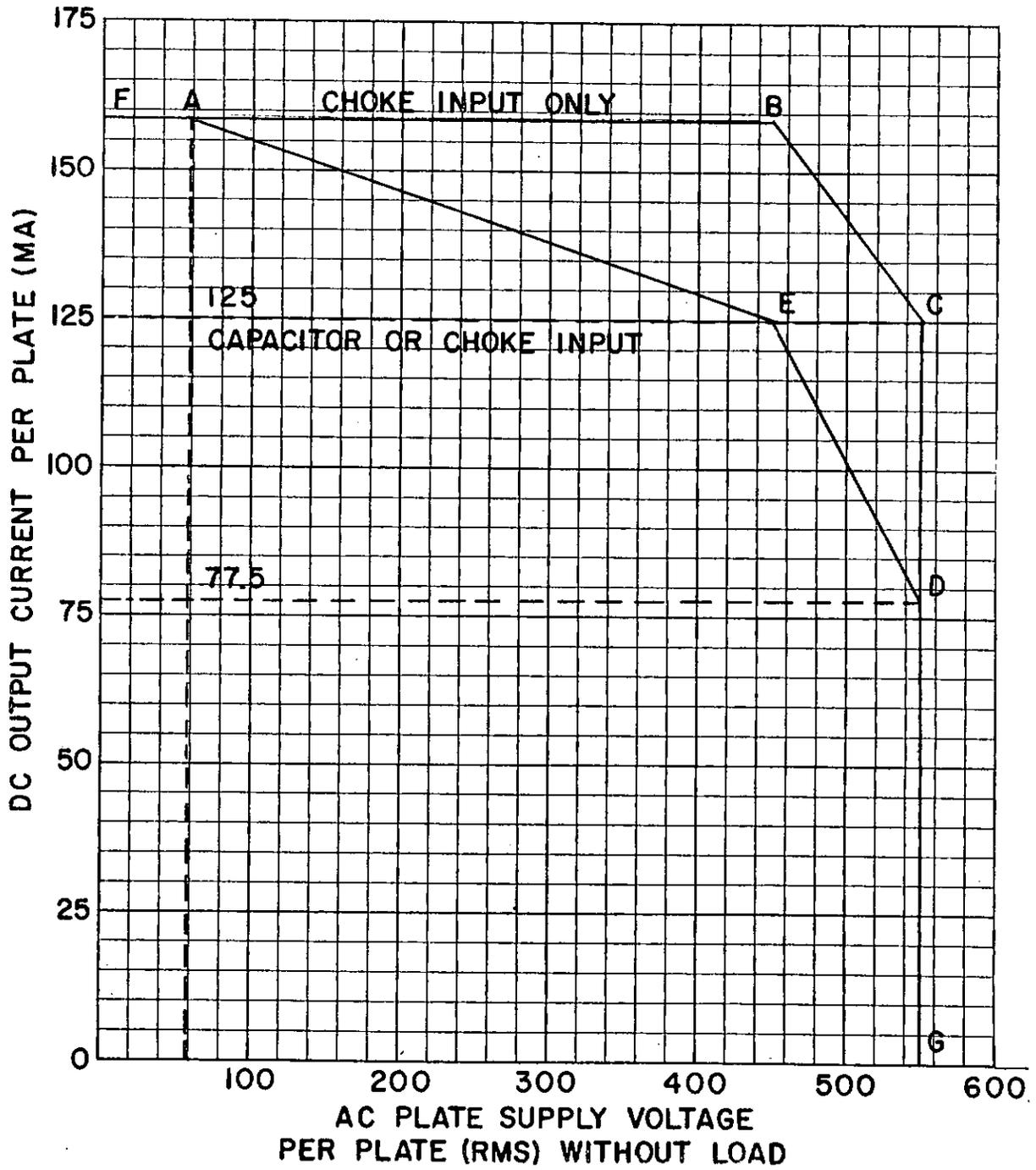
Plate supply voltages are measured with the rectifier tube non-conducting, i.e., with the transformer unloaded. This unloaded voltage is used when calculating rectification efficiency.

The rectification efficiency is defined as

$$\frac{\text{D C Output Voltage}}{\sqrt{2} \text{ (RMS Supply Voltage Per Plate)}}$$

The D C output voltage is measured at the input to the filter.

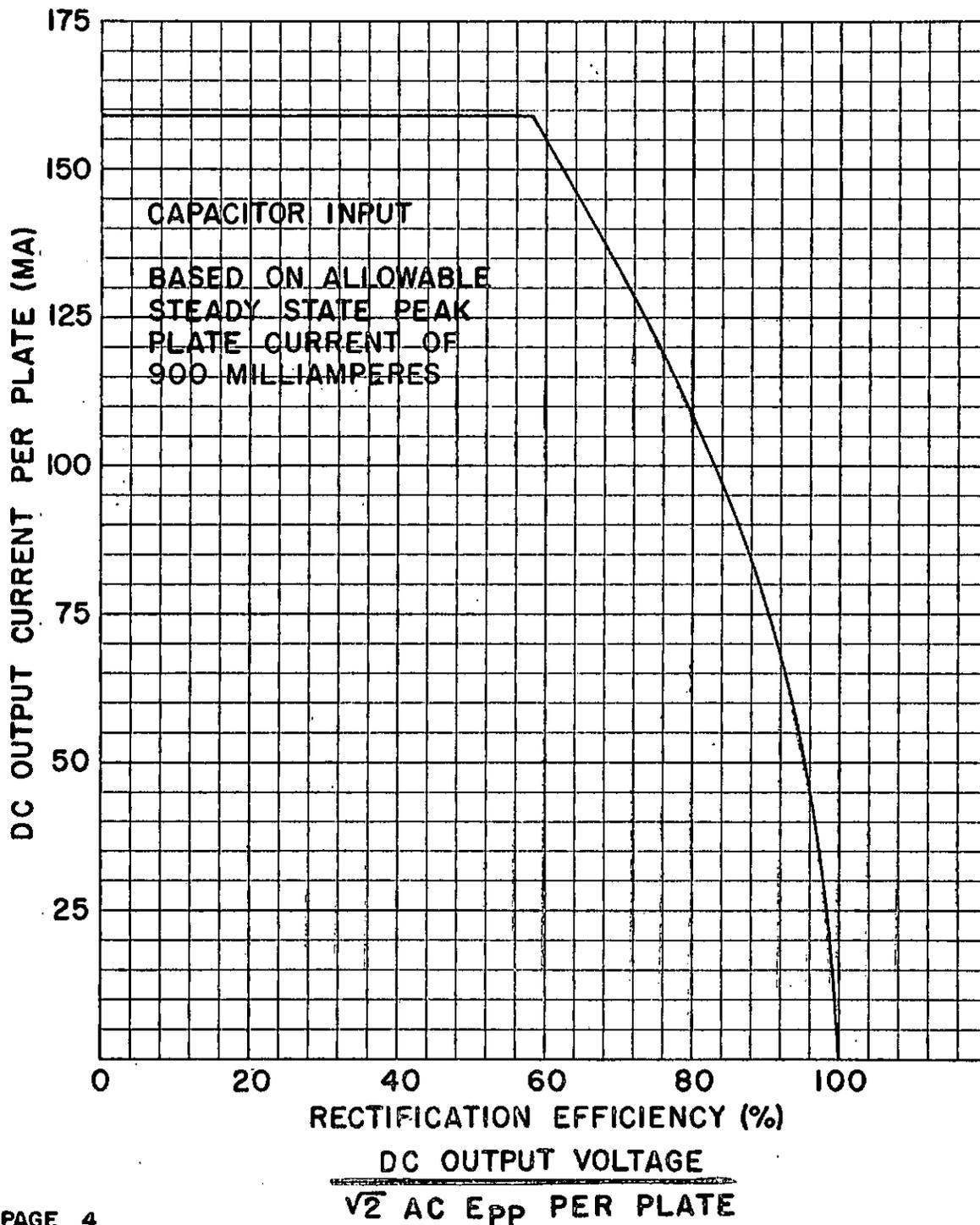
RATING CHART I



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5X4GA

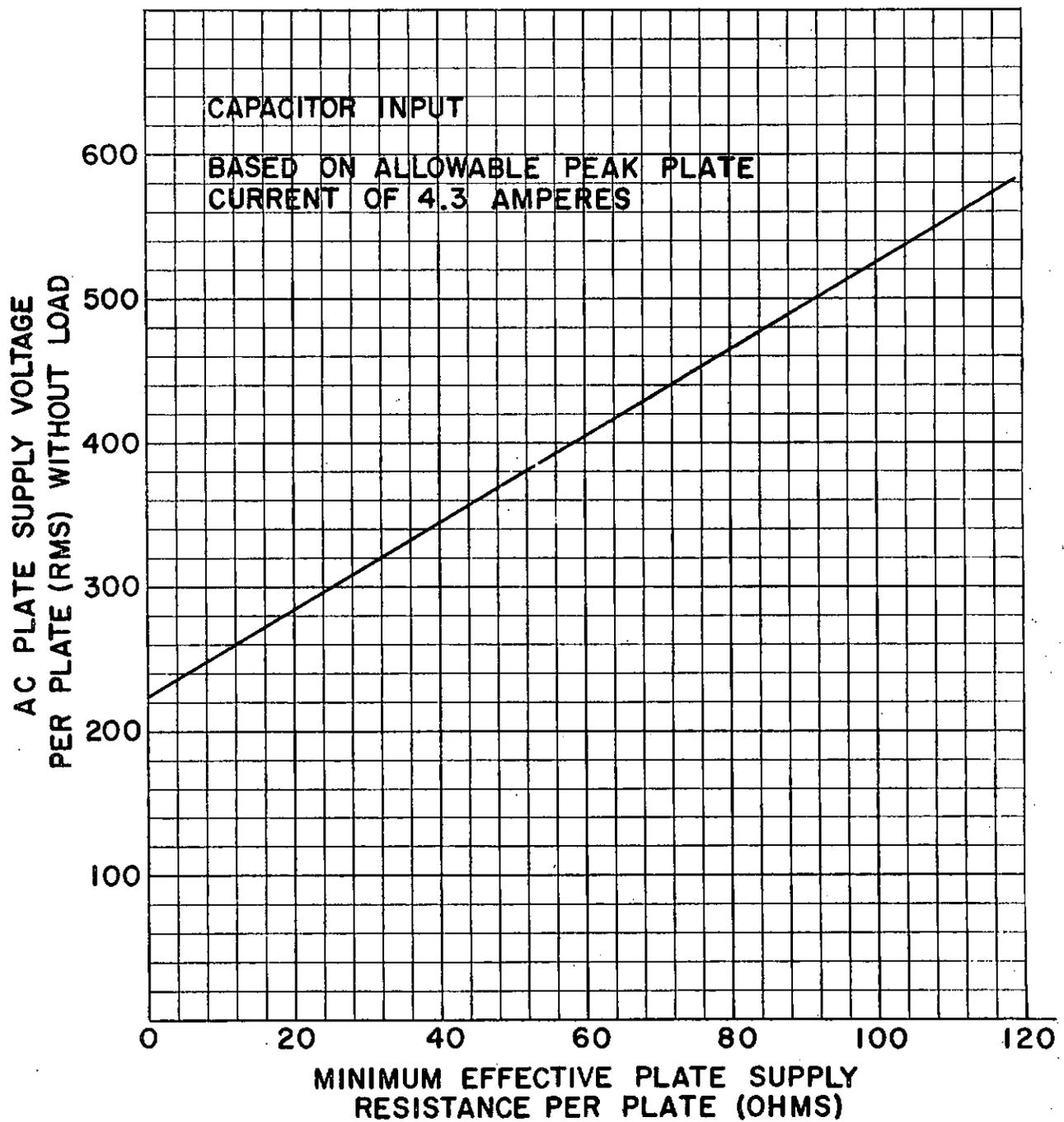
RATING CHART II



SYLVANIA

5X4GA

RATING CHART III





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5Y4GA

MECHANICAL DATA

Bulb	T-12
Base	B8-118, Short Medium Shell Octal, 8-Pin
Basing	5Q
Cathode	Coated Filament
Mounting Position ¹	Vertical

ELECTRICAL DATA

FILAMENT CHARACTERISTICS

Filament Voltage	5.0 Volts
Filament Current	2.0 Amperes

RATINGS (Design Center Values)

Peak Inverse Plate Voltage	1400 Volts Max.
A C Plate Supply Voltage Each Plate	(See Rating Chart)
Steady State Peak Plate Current Each Plate	400 Ma Max.
Transient Peak Plate Current Each Plate	2.2 Amperes Max.
Steady State D C Output Current Each Plate	(See Rating Chart)
Tube Voltage Drop (Measured with Tube Conducting 125 Ma Each Plate)	60 Volts

TYPICAL OPERATION

Full Wave Rectifier Service

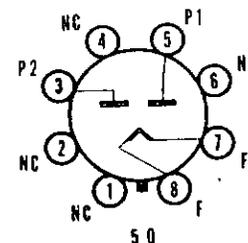
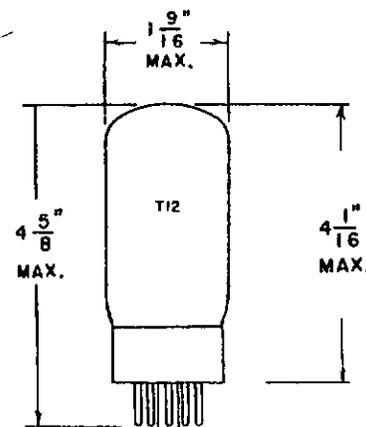
	Capacitor Input	Choke Input
A C Plate Supply Voltage Each Plate (RMS)	350	500 Volts
Input Capacitor	10	μf
Input Choke		10 Henrys
Effective Plate Supply Impedance Each Plate	50	Ohms
D C Output Current	125	125 Ma
D C Output Voltage	350	390 Volts

NOTE:

- Horizontal operation permitted if pins 1 and 4 are in a vertical plane.

QUICK REFERENCE DATA

The Sylvania Type 5Y4GA is a filamentary, full wave, general purpose rectifier employing a T-12 envelope. Electrically, it is identical to the Type 5Y4G. Except for basing, it is identical to the Type 5Y3GA.



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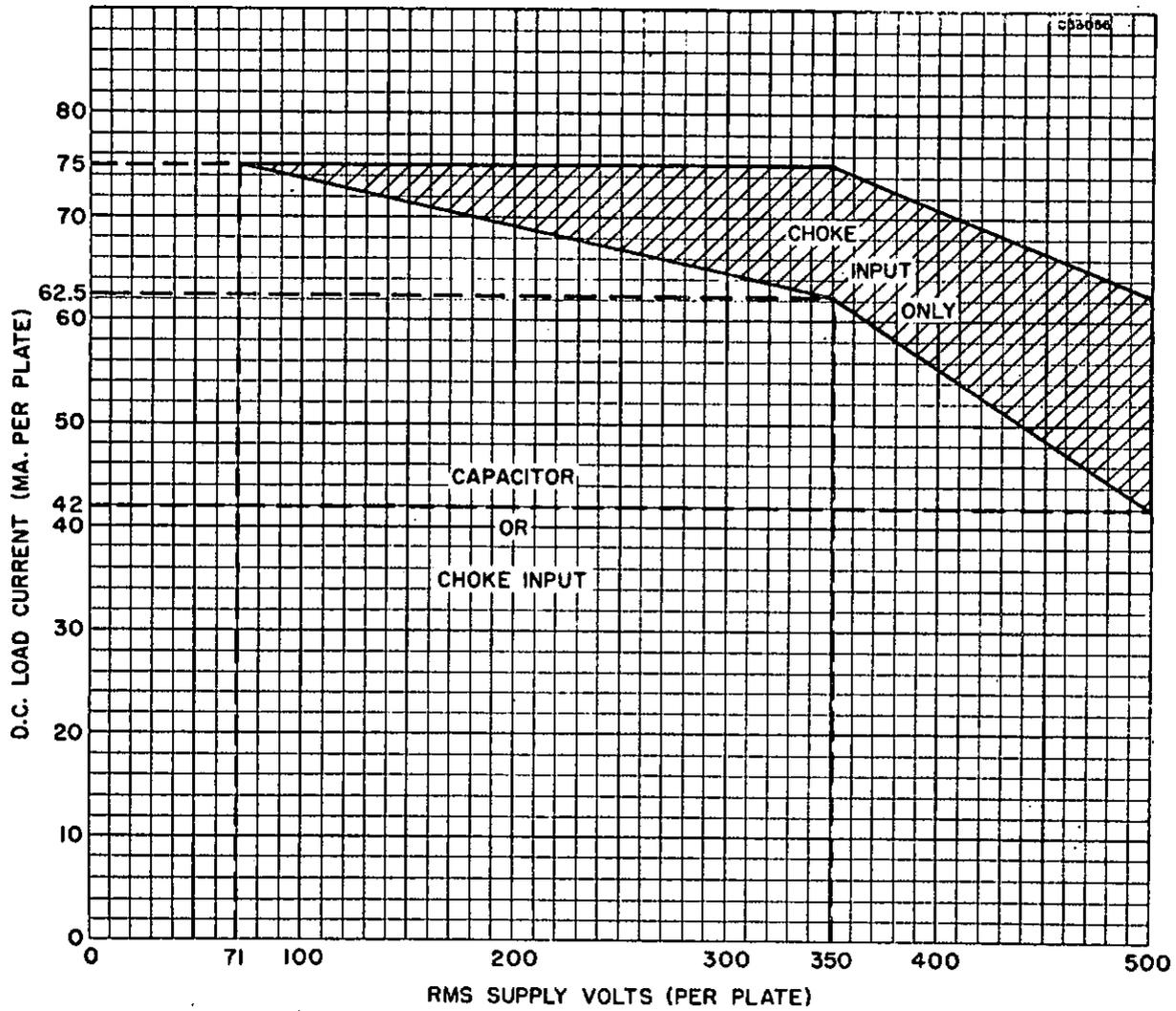
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SYLVANIA
5Y4GA

RATING CHART





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5Y3GA

MECHANICAL DATA

Bulb	T-12
Base	B5-121, Short Medium Shell Octal, 5-Pin
Basing	5T
Cathode	Coated Filament
Mounting Position	Vertical

ELECTRICAL DATA

FILAMENT CHARACTERISTICS

Filament Voltage	5.0 Volts
Filament Current	2.0 Amperes

RATINGS (Design Center Values)

Peak Inverse Plate Voltage	1400 Volts Max.
A C Plate Supply Voltage Each Plate	(See Rating Chart)
Steady State Peak Plate Current Each Plate	400 Ma Max.
Transient Peak Plate Current Each Plate	2.2 Amperes Max.
Steady State D C Output Current Each Plate	(See Rating Chart)
Tube Voltage Drop (Measured with Tube Conducting 125 Ma Each Plate)	60 Volts

TYPICAL OPERATION

Full Wave Rectifier Service

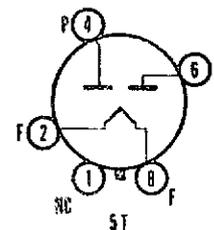
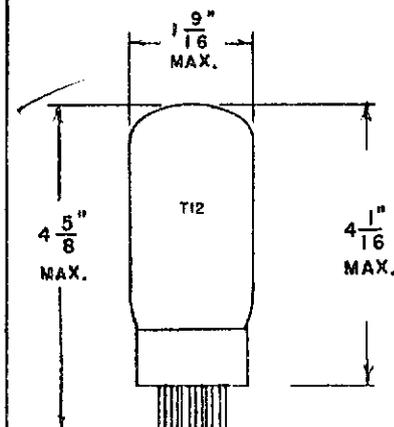
	Capacitor Input	Choke Input
A C Plate Supply Voltage Each Plate (R MS)	350	500 Volts
Input Capacitor	10	μ f
Input Choke		10 Henrys
Effective Plate Supply Impedance		
Each Plate	50	Ohms
D C Output Current	125	125 Ma
D C Output Voltage	350	390 Volts

NOTE:

1. Horizontal operation permitted if pins 2 and 4 are in a vertical plane.

QUICK REFERENCE DATA

The Sylvania Type 5Y3GA is a filamentary, full wave, general purpose rectifier employing a T-12 bulb. Except for envelope size, the 5Y3GA is identical to the Type 5Y3G and 5Y3GT.



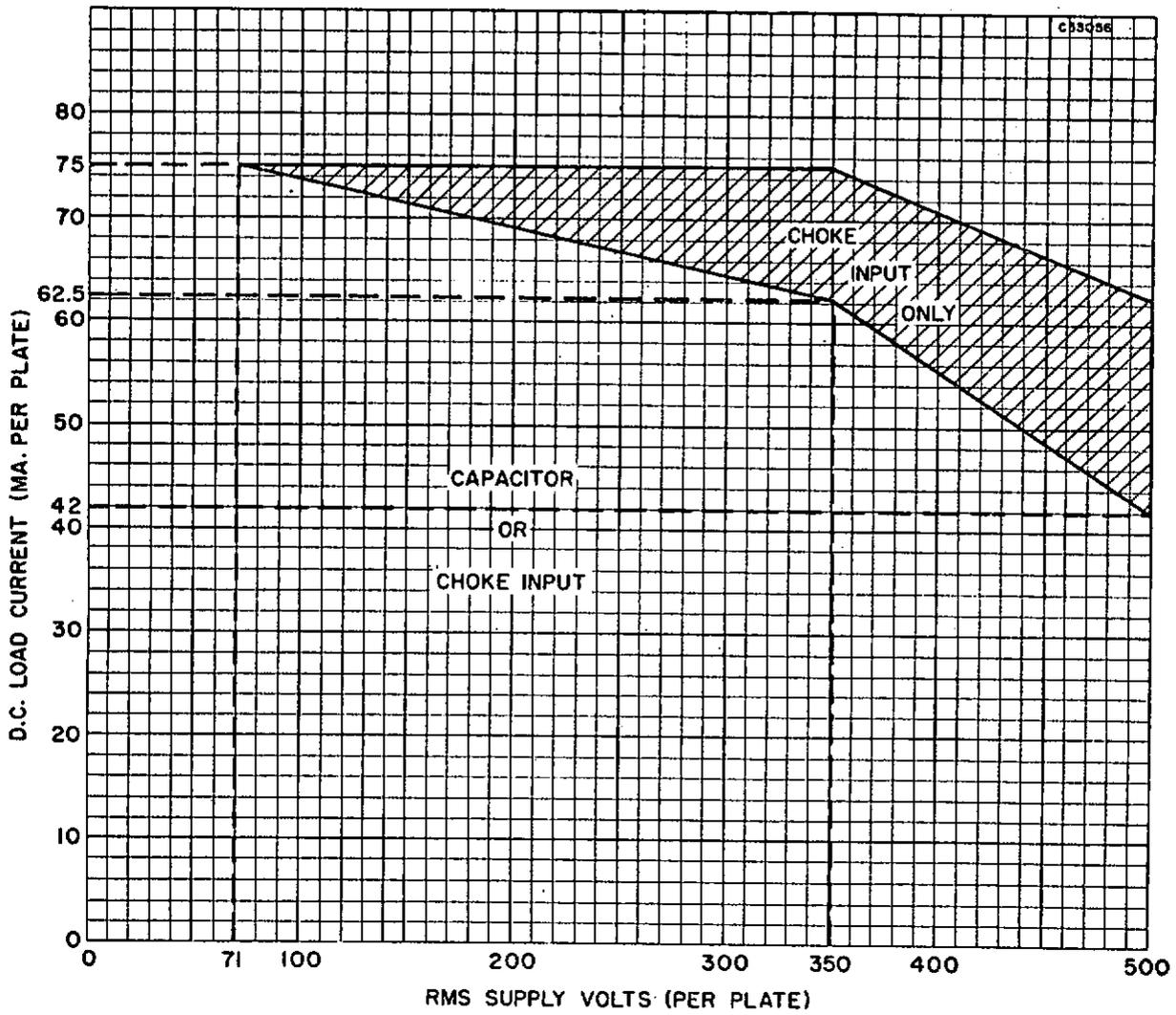
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RATING CHART





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50C6GA

MECHANICAL DATA

Bulb	T-12
Base	B7-119, Short Medium Shell Octal, 7-Pin
Basing	7S
Cathode	Coated Unipotential
Mounting Position	Any

ELECTRICAL DATA

HEATER CHARACTERISTICS

Heater Voltage	50 Volts
Heater Current	150 Ma
Maximum Heater-Cathode Voltage	
Heater Negative with Respect to Cathode	180 Volts
Heater Positive with Respect to Cathode	180 Volts

RATINGS (Design Center Values)

Plate Voltage	200 Volts	Max.
Grid No. 2 Supply Voltage	200 Volts	Max.
Grid No. 2 Voltage	See Rating Chart	
Plate Dissipation	12.5 Watts	Max.
Grid No. 2 Dissipation	1.75 Watts	Max.
Grid No. 1 Circuit Resistance		
Fixed Bias	0.1 Megohm	Max.
Self Bias	0.5 Megohm	Max.

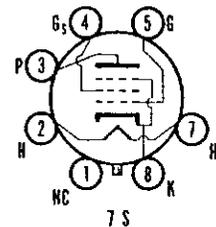
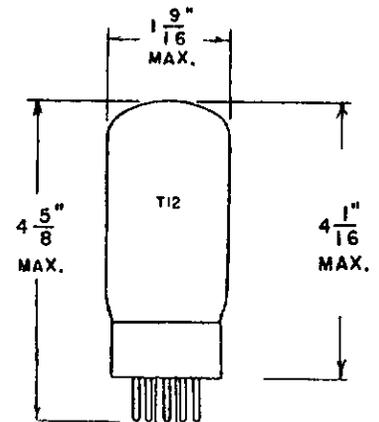
CHARACTERISTICS AND TYPICAL OPERATION

Class A₁ Amplifier

Plate Voltage	135	200 Volts
Grid No. 2 Voltage	135	135 Volts
Grid No. 1 Voltage	-13.5	-14 Volts
Peak A F Grid No. 1 Voltage	13.5	14 Volts
Zero Signal Plate Current	58	61 Ma
Maximum Signal Plate Current	60	66 Ma
Zero Signal Grid No. 2 Current	3.5	2.2 Ma
Maximum Signal Grid No. 2 Current	11.5	9 Ma
Transconductance	7,000	7,100 μmhos
Plate Resistance (approx.)	9,300	18,300 Ohms
Load Resistance	2,000	2,600 Ohms
Maximum Signal Power Output	3.6	6 Watts
Total Harmonic Distortion (approx.)	10	10 Percent

QUICK REFERENCE DATA

The Sylvania Type 50C6GA is a beam power amplifier designed for service as a medium power audio amplifier. Except for a T-12 envelope, it is identical to the Type 50C6G. Electrical characteristics are also identical to the Types 6Y6G and 6Y6GA.



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SCREEN GRID RATING CURVE

