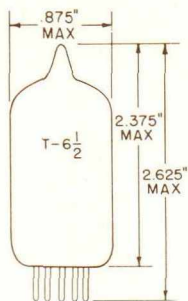


TUNG-SOL

TRIODE PENTODE

MINIATURE TYPE



GLASS BULB

MINIATURE BUTTON

9 PIN BASE E9-1

OUTLINE DRAWING

JEDEC 6-3

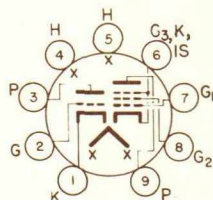
COATED UNIPOTENTIAL CATHODE

HEATER

6.3 VOLTS 600 MA.

AC OR DC

ANY MOUNTING POSITION


 BOTTOM VIEW
 BASING DIAGRAM
 JEDEC 9DX

THE 6AU8 IS A GENERAL-PURPOSE MINIATURE TUBE CONTAINING A SHARP CUT-OFF PENTODE AND A MEDIUM-MU TRIODE IN ONE ENVELOPE. EACH SECTION HAS ITS OWN CATHODE AND IS ELECTRICALLY INDEPENDENT. IT IS DESIGNED FOR USE IN 600 MA. SERIES HEATER OPERATED MONOCHROME AND COLOR TELEVISION RECEIVERS. THERMAL CHARACTERISTICS OF THE HEATER ARE CONTROLLED SUCH THAT HEATER VOLTAGE SURGES DURING THE WARM-UP CYCLE ARE MINIMIZED PROVIDED IT IS USED WITH OTHER TYPES THAT ARE SIMILARLY CONTROLLED. THE PENTODE SECTION IS PARTICULARLY SUITED FOR USE AS A VIDEO AMPLIFIER, VIDEO IF AMPLIFIER AND SOUND IF AMPLIFIER. THE TRIODE SECTION IS INTENDED FOR USE AS A SYNC AMPLIFIER, SEPARATOR OR CLIPPER OR AS A SWEEP OSCILLATOR.

DIRECT INTERELECTRODE CAPACITANCES

WITH NO EXTERNAL SHIELD

	PENTODE SECTION	TRIODE SECTION	
GRID TO PLATE	0.044	2.2	pf
INPUT	7.5	2.6	pf
OUTPUT	2.4	0.34	pf
PENTODE GRID #4 TO TRIODE PLATE	0.005		pf
TRIODE GRID TO PENTODE PLATE	0.002		pf
PENTODE PLATE TO TRIODE PLATE	0.12		pf

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TUNG-SOL

CONTINUED FROM PRECEDING PAGE

RATINGS

INTERPRETED ACCORDING TO DESIGN CENTER SYSTEM

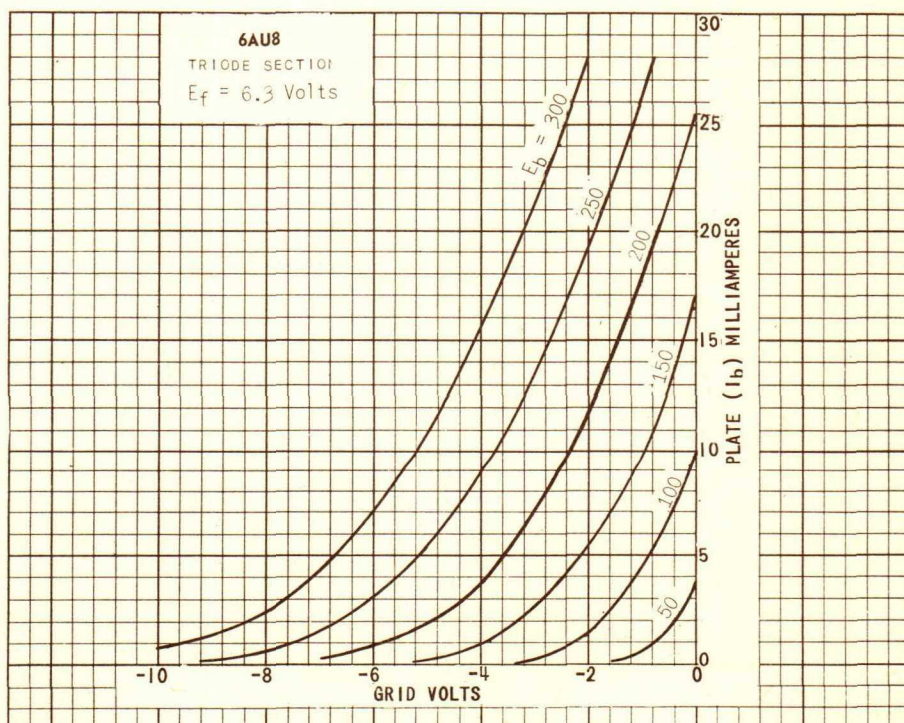
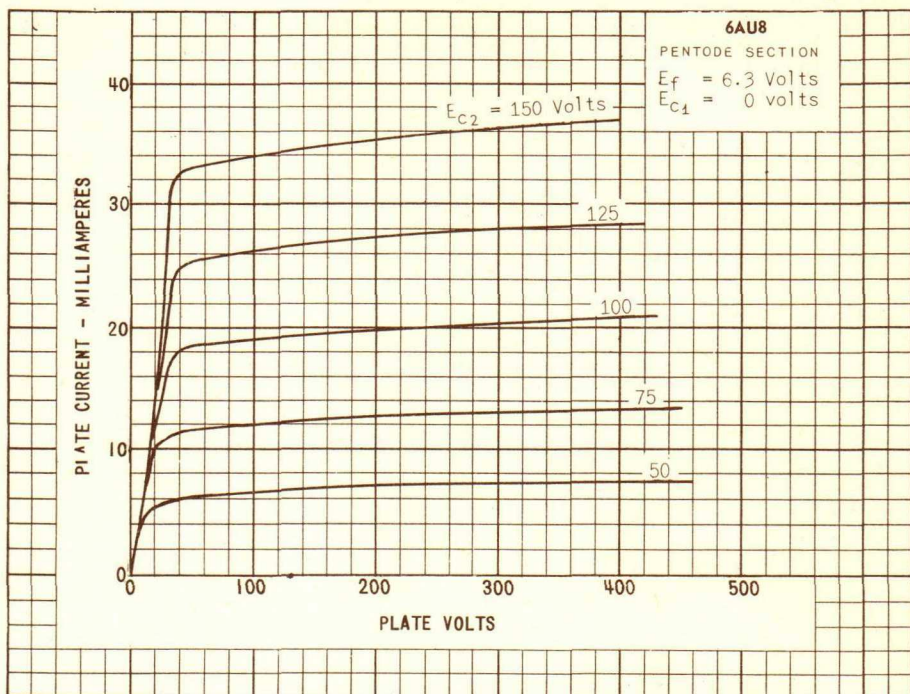
	PENTODE SECTION	TRIODE SECTION	
MAXIMUM HEATER-CATHODE VOLTAGE:			
HEATER NEGATIVE WITH RESPECT TO CATHODE			
TOTAL DC AND PEAK	200		VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE			
DC	100		VOLTS
TOTAL DC AND PEAK	200		VOLTS
MAXIMUM PLATE VOLTAGE	300	300	VOLTS
MAXIMUM GRID #2 SUPPLY VOLTAGE	300	---	VOLTS
MAXIMUM GRID #2 VOLTAGE	SEE RATING CHART		
MAXIMUM POSITIVE DC GRID #1 VOLTAGE	0	0	VOLTS
MAXIMUM PLATE DISSIPATION	3.0	2.5	WATTS
MAXIMUM GRID #2 DISSIPATION	1.0	---	WATTS
MAXIMUM GRID #1 CIRCUIT RESISTANCE:			
FIXED, BIAS	0.25	0.5	MEGOHM
CATHODE BIAS	1.0	1.0	MEGOHM
HEATER WARM-UP TIME (APPROX.) ^A	11.0		SECONDS

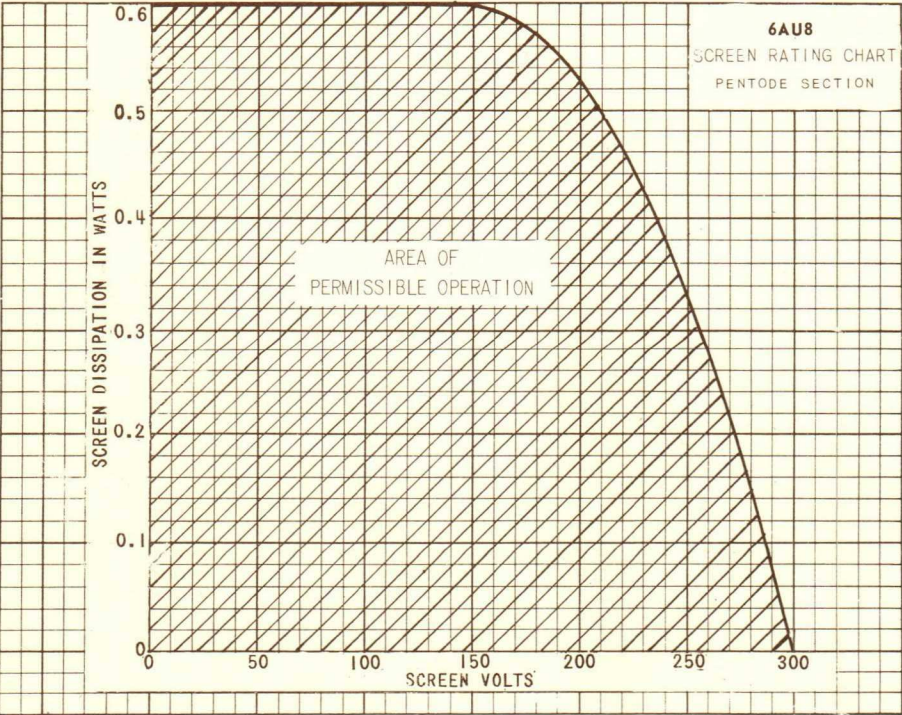
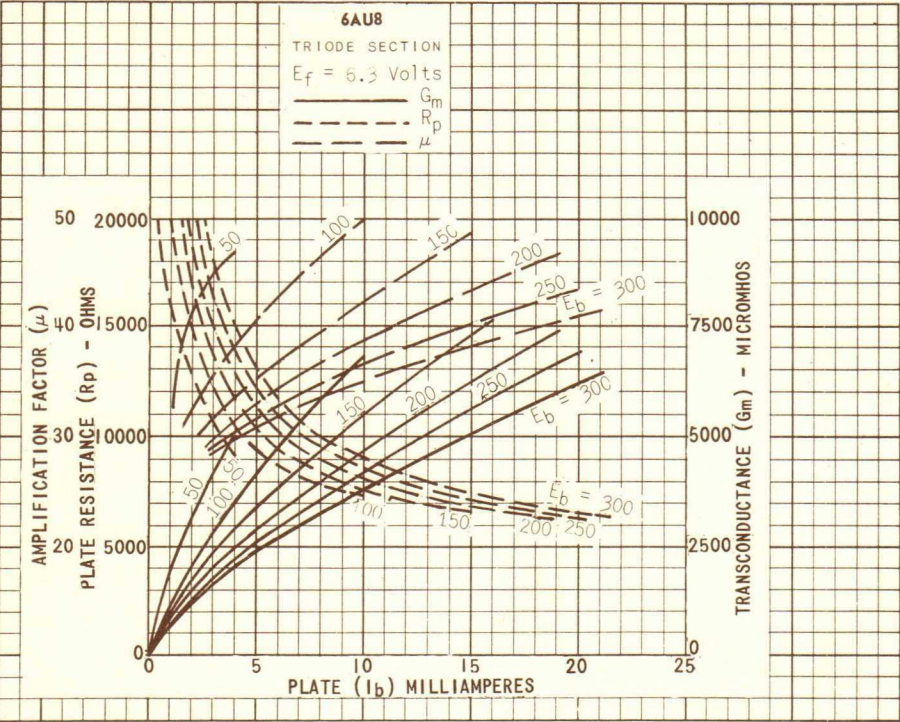
^A HEATER WARM-UP TIME IS DEFINED AS THE TIME REQUIRED FOR THE VOLTAGE ACROSS THE HEATER TO REACH 80% OF ITS RATED VOLTAGE AFTER APPLYING 4 TIMES RATED HEATER VOLTAGE TO A CIRCUIT CONSISTING OF THE TUBE HEATER IN SERIES WITH A RESISTANCE OF VALUE 3 TIMES THE NOMINAL HEATER OPERATING RESISTANCE.

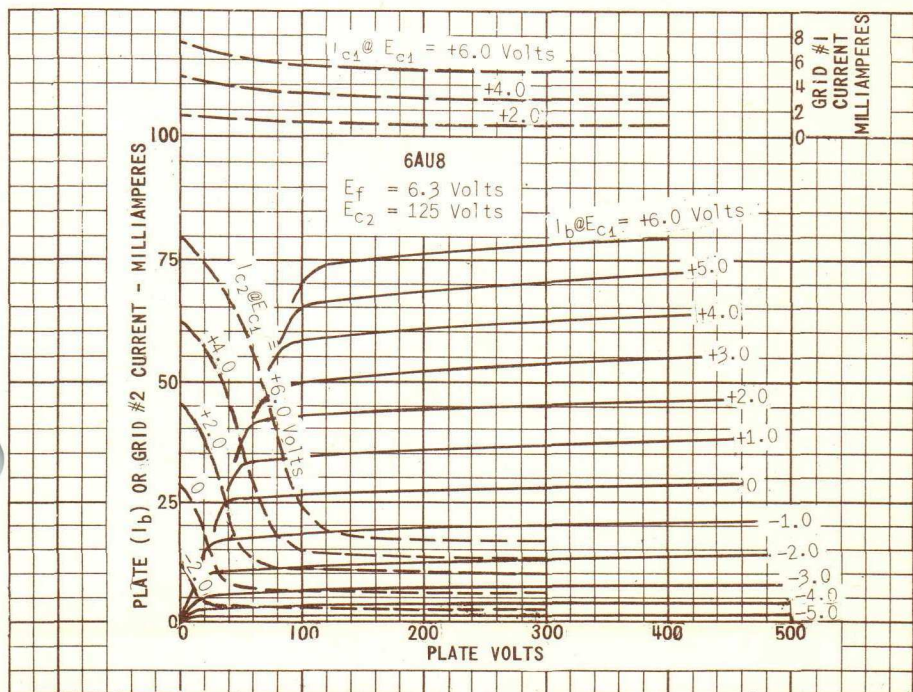
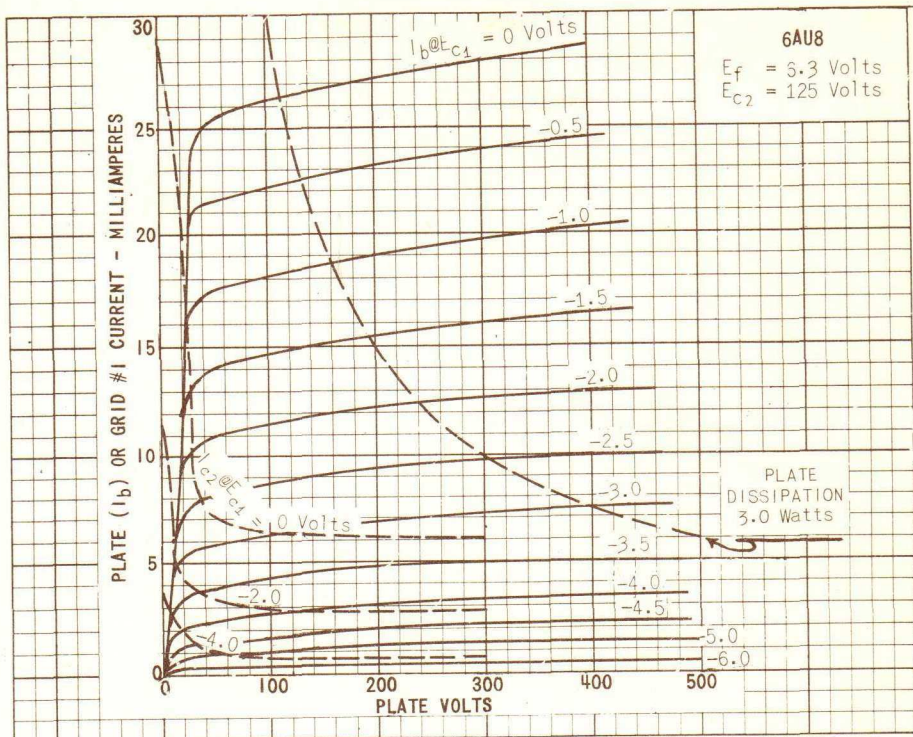
TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

CLASS A₁ AMPLIFIER

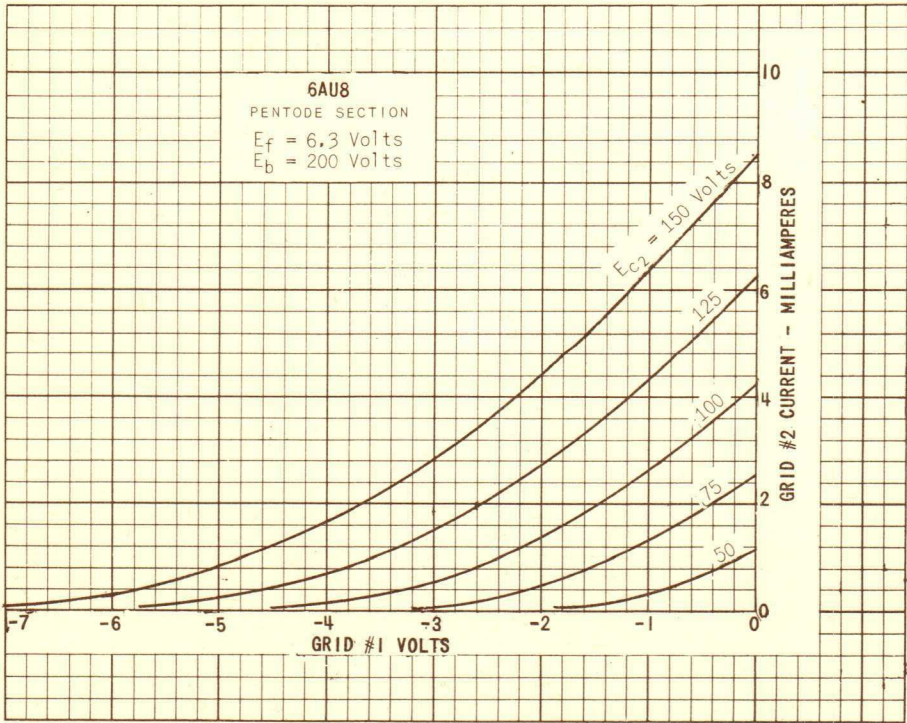
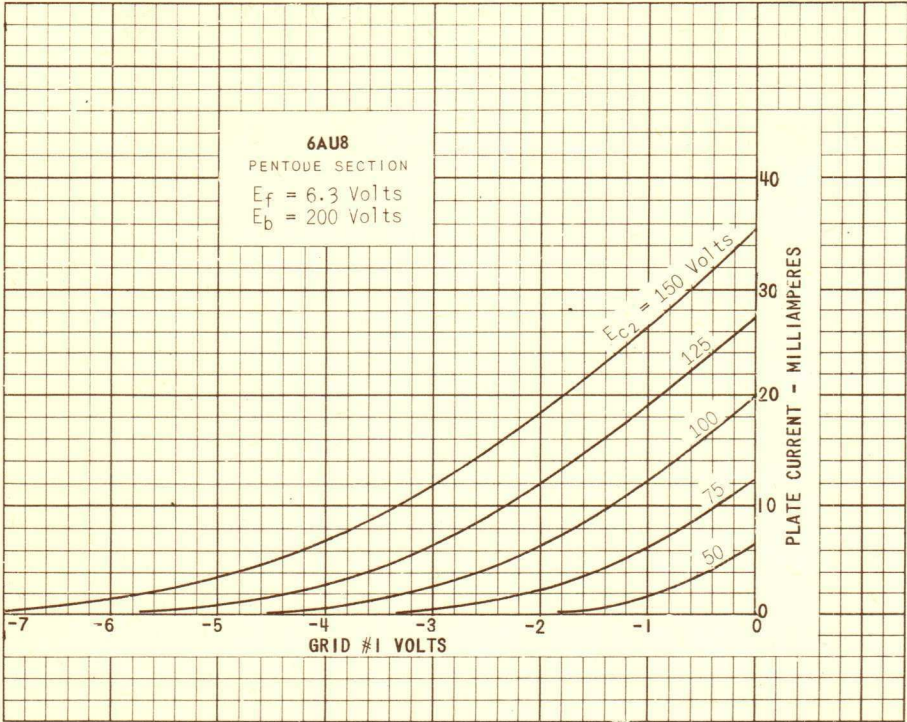
	PENTODE SECTION	TRIODE SECTION	
PLATE VOLTAGE	200	150	VOLTS
GRID #2 VOLTAGE	125	---	VOLTS
CATHODE BIAS RESISTOR	82	150	OHMS
AMPLIFICATION FACTOR	---	40	
PLATE RESISTANCE (APPROX.)	150 000	8 200	OHMS
TRANSCONDUCTANCE	7 000	4 900	μMHOS
PLATE CURRENT	15	9.0	MA.
GRID #2 CURRENT	3.4	---	MA.
GRID #1 VOLTAGE (APPROX.) FOR I _b = 100 μAMP.	-8	-6.5	VOLTS

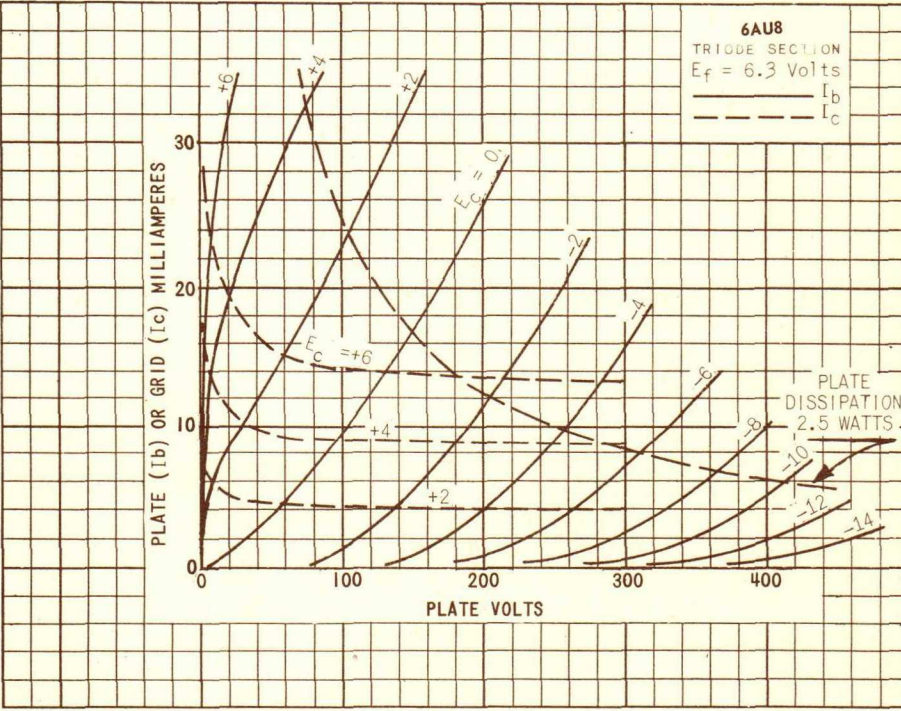
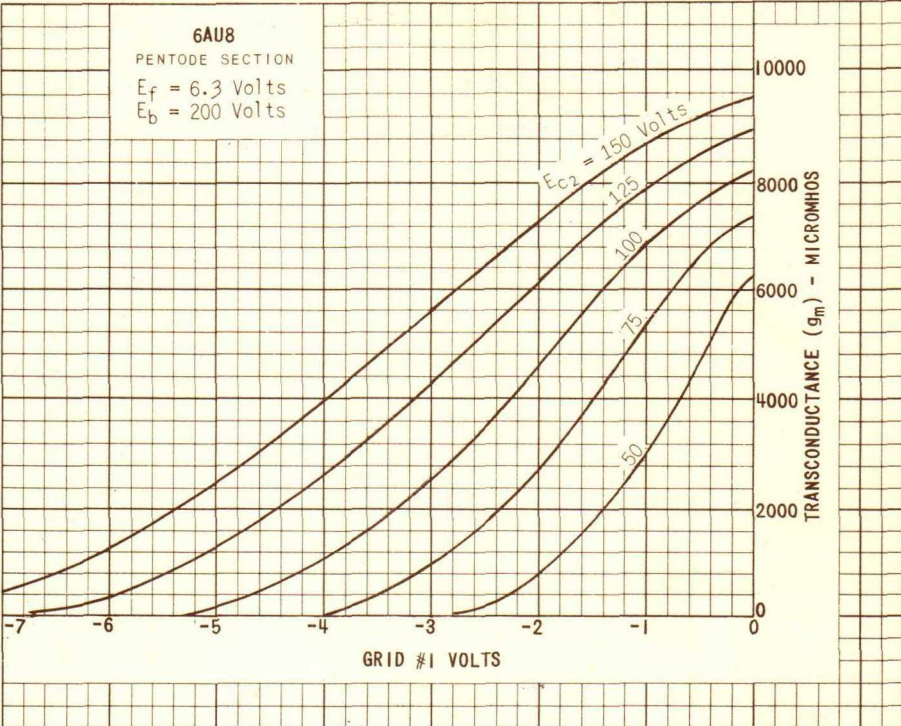




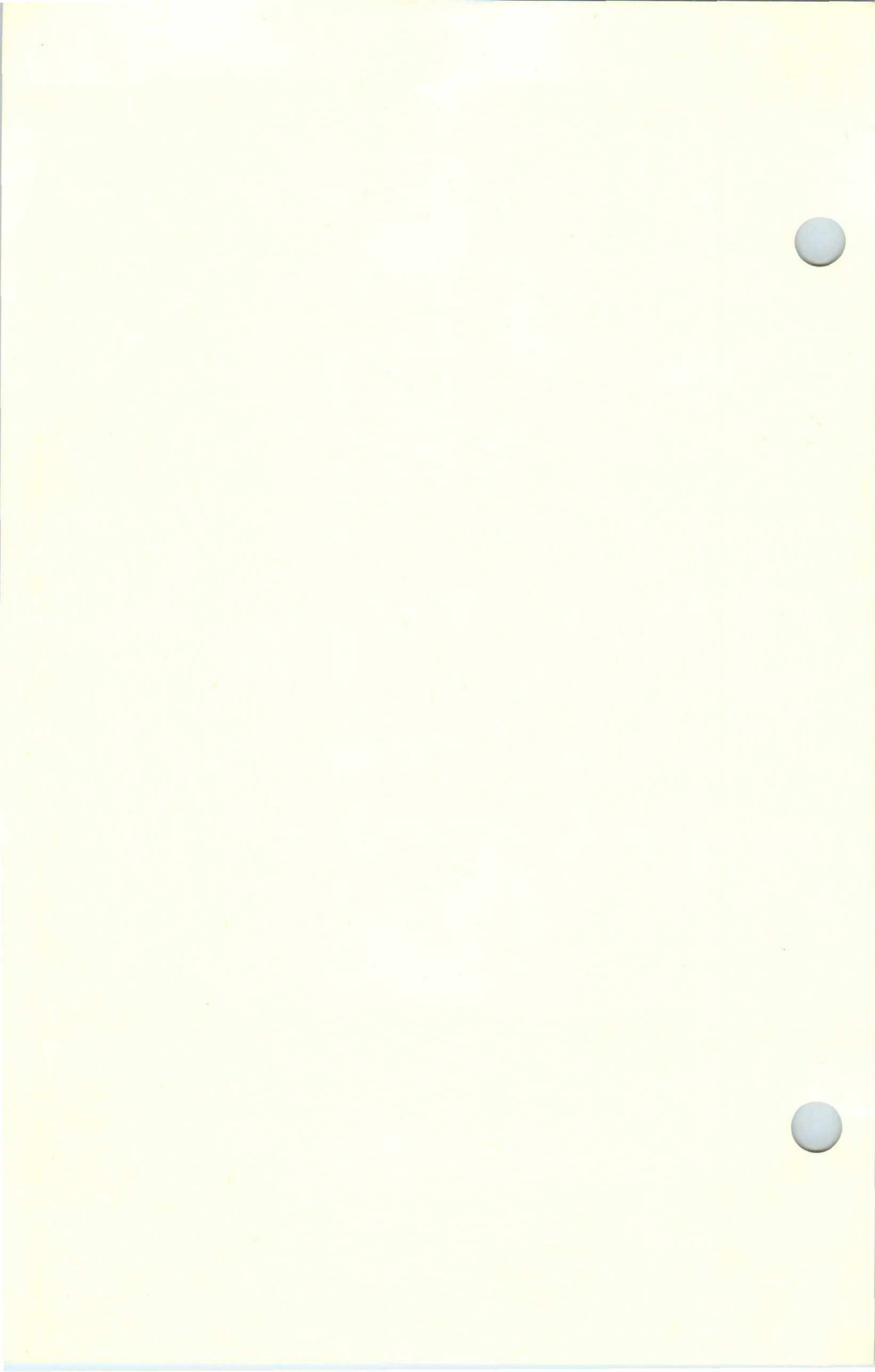


6AU8

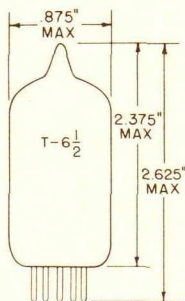




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TUNG-SOL

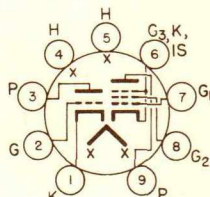
TRIODE PENTODE
MINIATURE TYPE

GLASS BULB
MINIATURE BUTTON
9 PIN BASE E9-1
JEDEC 6-3

COATED UNIBOTENTIAL CATHODE

FOR
600 MA. SERIES HEATER OPERATED
MONOCHROME AND COLOR
TV RECEIVERS

ANY MOUNTING POSITION



BOTTOM VIEW

BASING DIAGRAM
JEDEC 9DX

THE 6AU8A IS A GENERAL-PURPOSE MINIATURE TUBE CONTAINING A SHARP CUT-OFF PENTODE AND A MEDIUM-MU TRIODE IN ONE ENVELOPE. EACH SECTION HAS ITS OWN CATHODE AND IS ELECTRICALLY INDEPENDENT. IT IS DESIGNED FOR USE IN 600 MA. SERIES HEATER OPERATED MONOCHROME AND COLOR TELEVISION RECEIVERS. THERMAL CHARACTERISTICS OF THE HEATER ARE CONTROLLED SUCH THAT HEATER VOLTAGE SURGES DURING THE WARM-UP CYCLE ARE MINIMIZED PROVIDED IT IS USED WITH OTHER TYPES THAT ARE SIMILARLY CONTROLLED. THE PENTODE SECTION IS PARTICULARLY SUITED FOR USE AS A VIDEO AMPLIFIER, VIDEO IF AMPLIFIER AND SOUND IF AMPLIFIER. THE TRIODE SECTION IS INTENDED FOR USE AS A SYNC AMPLIFIER, SEPARATOR OR CLIPPER OR AS A SWEEP OSCILLATOR.

DIRECT INTERELECTRODE CAPACITANCES

WITHOUT EXTERNAL SHIELD

	PENTODE SECTION	TRIODE SECTION	
GRID TO PLATE	0.06	2.2	pf
INPUT	7.5	2.6	pf
OUTPUT	3.4	0.34	pf
PENTODE GRID 2 TO TRIODE PLATE (MAX.)		0.006	pf
TRIODE GRID TO PENTODE PLATE (MAX.)	→	0.022	pf
PENTODE PLATE TO TRIODE PLATE (MAX.)		0.12	pf

HEATER CHARACTERISTICS AND RATINGS

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

AVERAGE CHARACTERISTICS	6.3 VOLTS	600	MA.
HEATER WARM-UP TIME ^A		11	SECONDS
HEATER SUPPLY LIMITS:			
CURRENT OPERATION		600±40	MA.
MAXIMUM HEATER CATHODE VOLTAGE:			
HEATER NEGATIVE WITH RESPECT TO CATHODE			
TOTAL DC AND PEAK		200	VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE			
DC		100	VOLTS
TOTAL DC AND PEAK		200	VOLTS

TUNG-SOL

→ MAXIMUM RATINGS

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

	TRIODE SECTION	PENTODE SECTION	
PLATE VOLTAGE	330	330	VOLTS
GRID 2 VOLTAGE	----	SEE RATING CHART	
GRID 2 SUPPLY VOLTAGE	----	330	VOLTS
POSITIVE DC GRID 1 VOLTAGE	0	0	VOLTS
PLATE DISSIPATION	2.8	3.3	WATTS
GRID 2 INPUT:			
FOR GRID 2 VOLTAGES UP TO 165 VOLTS	----	1.0	WATT
FOR GRID 2 VOLTAGES BETWEEN 165 & 330 V.	----	SEE RATING CHART	
GRID 1 CIRCUIT RESISTANCE:			
WITH FIXED BIAS	0.5	0.25	MEGOHMS
WITH CATHODE BIAS	1.0	1.0	MEGOHMS

TYPICAL OPERATING CHARACTERISTICS

CLASS A 1 AMPLIFIER

	PENTODE SECTION	TRIODE SECTION	
PLATE VOLTAGE	200	150	VOLTS
GRID 2 VOLTAGE	125	----	VOLTS
CATHODE BIAS RESISTOR	82	150	OHMS
AMPLIFICATION FACTOR	----	40	
TRANSCONDUCTANCE	7000	4900	μ MHOS
PLATE CURRENT	15	9.0	MA.
PLATE RESISTANCE (APPROX.)	150,000	8200	OHMS
GRID 2 CURRENT	2.4	----	MA.
GRID 1 VOLTAGE (APPROX.) FOR $I_b = 100 \mu$ AMP.	-8	-6.5	VOLTS
ZERO BIAS: *			
(WITH $E_b = 40$ V., $E_{c2} = 125$, instantaneous value)			
PLATE CURRENT	28	----	MA.
GRID 2 CURRENT	10	----	MA.

A

HEATER WARM-UP TIME IS DEFINED AS THE TIME REQUIRED FOR THE VOLTAGE ACROSS THE HEATER TO REACH 80% OF ITS RATED VOLTAGE AFTER APPLYING 4 TIMES RATED HEATER VOLTAGE TO A CIRCUIT CONSISTING OF THE TUBE HEATER IN SERIES WITH A RESISTANCE OF VALUE 3 TIMES THE NOMINAL HEATER OPERATING RESISTANCE.

NOTE:

THE TRIODE SECTION OF THE 6AU8A MAY BE DIODE-CONNECTED AND EMPLOYED AS A HIGH-PERVEANCE DIODE IN VIDEO-DETECTOR APPLICATIONS. THE DIODE OPERATION CAN BE OBTAINED EITHER WITH THE TRIODE GRID CONNECTED TO THE TRIODE PLATE AND THE COMBINATION OPERATED AS THE PLATE OF THE DIODE, OR WITH THE TRIODE PLATE GROUNDING AND THE TRIODE GRID OPERATED AS THE PLATE OF THE DIODE.

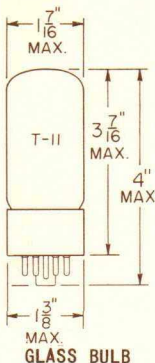
THE 6AU8 CURVES, ALSO, APPLY FOR THE 6AU8A.

→ INDICATES A CHANGE.

* INDICATES AN ADDITION.

TUNG-SOL

PENTODE



THE MAX. DIAMETER
OF THE T-12 BULB IS
1.9/16"

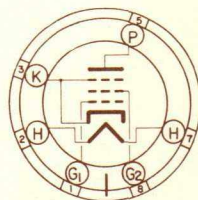
COATED UNIPOTENTIAL CATHODE

HEATER

6.3 VOLTS 1.2 AMP.

AC OR DC

ANY MOUNTING POSITION



BOTTOM VIEW

SHORT MEDIUM SHELL
6 PIN OCTAL

6CK

THE 6AV5GA IS A BEAM PENTODE DESIGNED FOR USE AS A HORIZONTAL-DEFLECTION
AMPLIFIER IN TELEVISION RECEIVERS. IT USES EITHER A T-11 OR T-12 BULB.

DIRECT INTERELECTRODE CAPACITANCES — APPROX.

WITH NO EXTERNAL SHIELD

GRID #1 TO PLATE	0.5	μf
INPUT	14	μf
OUTPUT	7.0	μf

RATINGS

INTERPRETED ACCORDING TO DESIGN CENTER SYSTEM^A
HORIZONTAL DEFLECTION AMPLIFIER^B

HEATER VOLTAGE	6.3	VOLTS
MAXIMUM HEATER-CATHODE VOLTAGE:		
HEATER POSITIVE WITH RESPECT TO CATHODE		
TOTAL DC AND PEAK	200	VOLTS
DC	100	VOLTS
HEATER NEGATIVE WITH RESPECT TO CATHODE		
TOTAL DC AND PEAK	200	VOLTS
MAXIMUM DC PLATE-SUPPLY VOLTAGE (BOOST + POWER SUPPLY)	550	VOLTS
MAXIMUM PEAK POSITIVE PULSE PLATE VOLTAGE (ABSOLUTE MAX.)	5 500 ^C	VOLTS
MAXIMUM PEAK NEGATIVE PULSE PLATE VOLTAGE	1 250	VOLTS
MAXIMUM GRID #2 VOLTAGE	175	VOLTS
MAXIMUM PEAK NEGATIVE GRID #1 VOLTAGE	300	VOLTS
MAXIMUM PLATE DISSIPATION ^D	11	WATTS
MAXIMUM GRID #2 DISSIPATION	2.5	WATTS
MAXIMUM DC CATHODE CURRENT	110	MA.
MAXIMUM PEAK CATHODE CURRENT	400	MA.
MAXIMUM GRID #1 CIRCUIT RESISTANCE	0.47	MEGOHM
MAXIMUM BULB TEMPERATURE (AT HOTTEST POINT)	210	°C
HEATER WARM-UP TIME (APPROX.)*	11.0	SECONDS

^A UNLESS OTHERWISE SPECIFIED.

^B FOR OPERATION IN A 525-LINE, 30-FRAME TELEVISION SYSTEM AS DESCRIBED IN "STANDARDS OF GOOD ENGINEERING PRACTICE CONCERNING TELEVISION BROADCAST STATIONS," FEDERAL COMMUNICATIONS COMMISSION. THE DUTY CYCLE OF THE VOLTAGE PULSE MUST NOT EXCEED 15 PERCENT OF ONE SCANNING CYCLE.

^C THIS VALUE MUST NOT BE EXCEEDED.

^D IN STAGES OPERATING WITH GRID LEAK BIAS, AN ADEQUATE CATHODE-BIAS RESISTOR OR OTHER SUITABLE MEANS IS REQUIRED TO PROTECT THE TUBE IN THE ABSENCE OF EXCITATION.

* HEATER WARM-UP TIME IS DEFINED AS THE TIME REQUIRED FOR THE VOLTAGE ACROSS THE HEATER TO REACH 80% OF ITS RATED VOLTAGE AFTER APPLYING 4 TIMES RATED HEATER VOLTAGE TO A CIRCUIT CONSISTING OF THE TUBE HEATER IN SERIES WITH A RESISTANCE OF VALUE 3 TIMES THE NOMINAL HEATER OPERATION RESISTANCE.

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TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

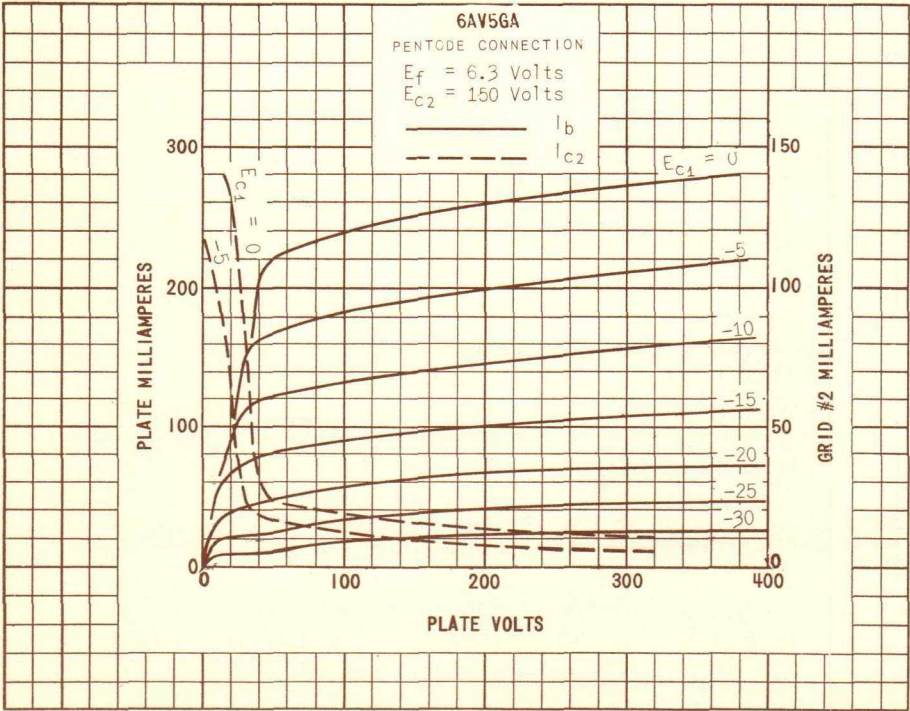
HEATER VOLTAGE	6.3		VOLTS
HEATER CURRENT	1.2		AMP.
PLATE VOLTAGE	60	250	VOLTS
GRID #2 VOLTAGE	150	150	VOLTS
GRID #1 VOLTAGE	0 ^E	-22.5	VOLTS
PLATE RESISTANCE (APPROX.)	---	14 500 ←	OHMS
TRANSCONDUCTANCE	---	5 900 ←	μMHOS
PLATE CURRENT	260 ←	57 ←	MA.
GRID #2 CURRENT	26 ←	2.1	MA.
GRID #1 VOLTAGE (APPROX.)	---	-43 ←	VOLTS
FOR I _b = 1.0 MA.	---		
TRIODE AMPLIFICATION FACTOR ^F	---	4.3	

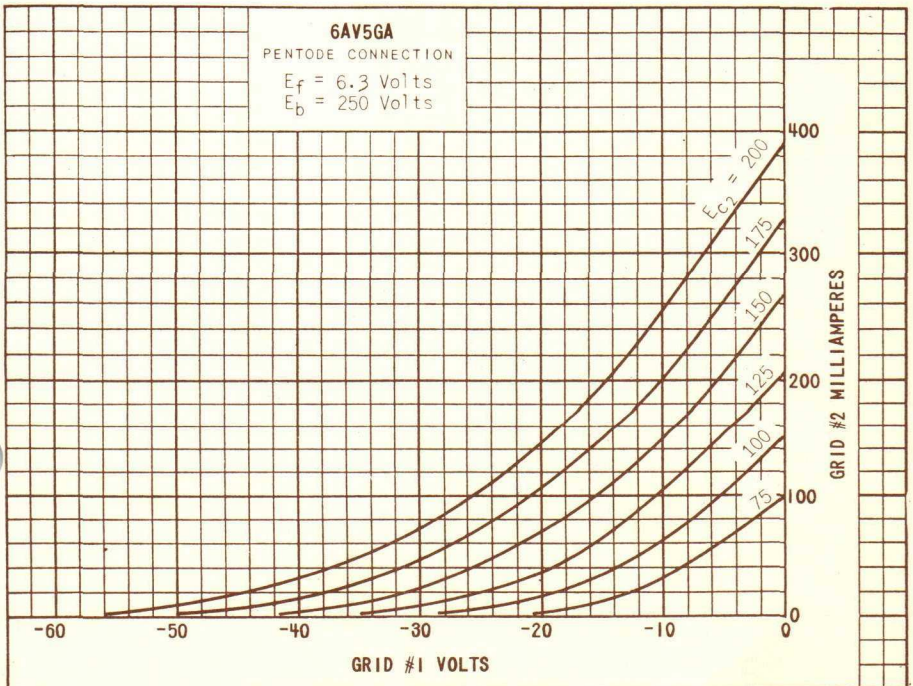
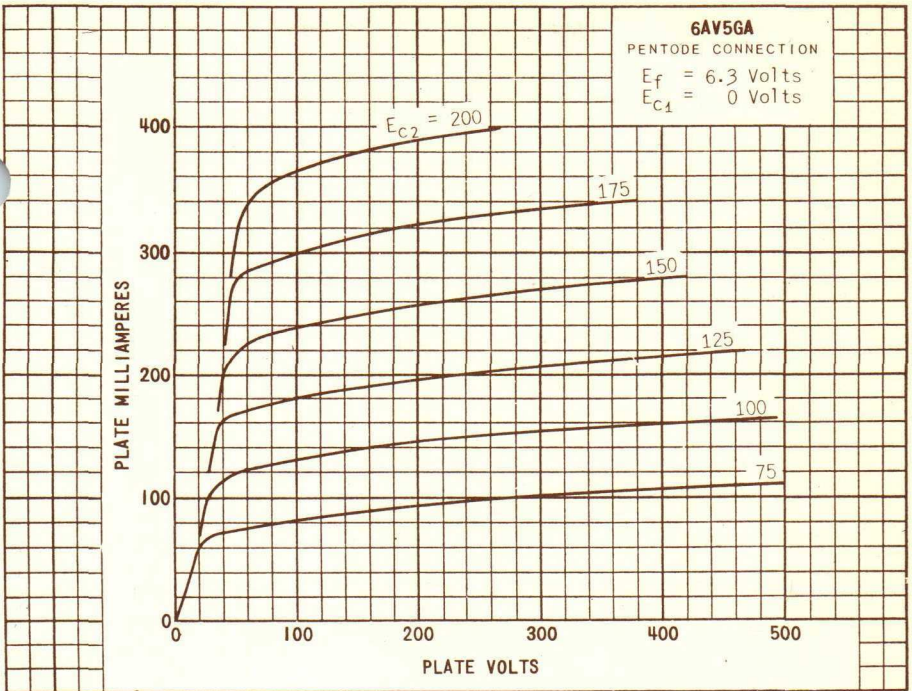
^E APPLIED FOR VERY SHORT INTERVAL SO AS NOT TO DAMAGE TUBE.

^F TRIODE CONNECTION (SCREEN TIED TO PLATE) WITH $E_b = E_{c2} = 150$ VOLTS AND $E_{c1} = -22.5$ VOLTS

SIMILAR TYPE REFERENCE: Except for heater characteristics, the 6AV5GA is identical to the 12AV5GA, 17AV5GA & the 25AV5GA.

→ INDICATES A CHANGE.





6AV5GA (25AV5GA)

6AV5GA

PENTODE CONNECTION

$E_f = 6.3$ Volts

$E_b = 250$ Volts

