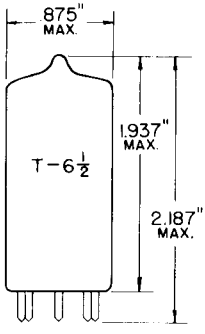
TUNG-SOL

TWIN TRIODE

MINIATURE TYPE

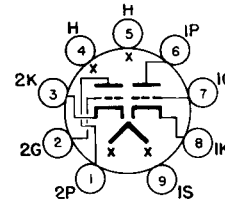


GLASS BULB
MINIATURE BUTTON
9 PIN BASE E9-1
OUTLINE DRAWING
JEDEC 6-2

COATED UNIPOTENTIAL CATHODE

CASCODE AMPLIFIER
FOR SERIES STRING VHF
TELEVISION RECEIVERS

ANY MOUNTING POSITION



BOTTOM VIEW

BASING DIAGRAM
JEDEC 9AJ

THE 4BC8 IS A MEDIUM-MU, SEMI-REMOTE CUT-OFF TWIN TRIODE USING THE 9 PIN MINIATURE CONSTRUCTION. IT IS DESIGNED FOR USE AS A CASCODE AMPLIFIER IN 600 MA. SERIES HEATER OPERATED VHF TELEVISION RECEIVER TUNERS. 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 WHICH ARE SIMILARLY CONTROLLED.

DIRECT INTERELECTRODE CAPACITANCES

EXTERNAL SHIELD #315 CONNECTED TO PIN 9

	#1 TRIODE	#2 TRIODE	
GRID TO PLATE (G TO P)	→1.2	→1.2	pf
PLATE TO CATHODE (P TO K)		→0.12	pf
HEATER TO CATHODE (H TO K)	→2.8	→2.8	pf
#1 INPUT: G1 TO (H+K+I.S.)	→2.6		pf
#2 INPUT: K TO (H+G+I.S.)[A]		→5.5	pf
#1 OUTPUT: P TO (H+K+I.S.)	1.3		pf
#2 OUTPUT: P TO (H+G+I.S.)[A]		→2.4	pf
#1 PLATE TO #2 PLATE (1P TO 2P)(MAX.)	→.02		pf
#2 PLATE TO #1 PLATE AND GRID:(2P TO 1P+1G) MAXIMUM	→.04		pf

[A] READ AS GROUNDED GRID AMPLIFIER.

→ INDICATES A CHANGE.

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HEATER CHARACTERISTICS AND RATINGS

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

AVERAGE CHARACTERISTICS	4.2 VOLTS	600	MA.
HEATER SUPPLY LIMITS:			
CURRENT OPERATION		600±40	MA.
MAXIMUM HEATER CATHODE VOLTAGE:			
HEATER NEGATIVE WITH RESPECT TO CATHODE[B]			
TOTAL DC AND PEAK		200	VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE			
DC		100	VOLTS
TOTAL DC AND PEAK		200	VOLTS
HEATER WARM-UP TIME (AVG.)[C]		11	SECONDS

MAXIMUM RATINGS

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

PLATE VOLTAGE	250	VOLTS
PLATE DISSIPATION	2.2	WATTS
CATHODE CURRENT	→ 22	MA.
GRID CIRCUIT RESISTANCE	0.5	MEGOHM

TYPICAL OPERATING CHARACTERISTICS

CLASS A_1 AMPLIFIER

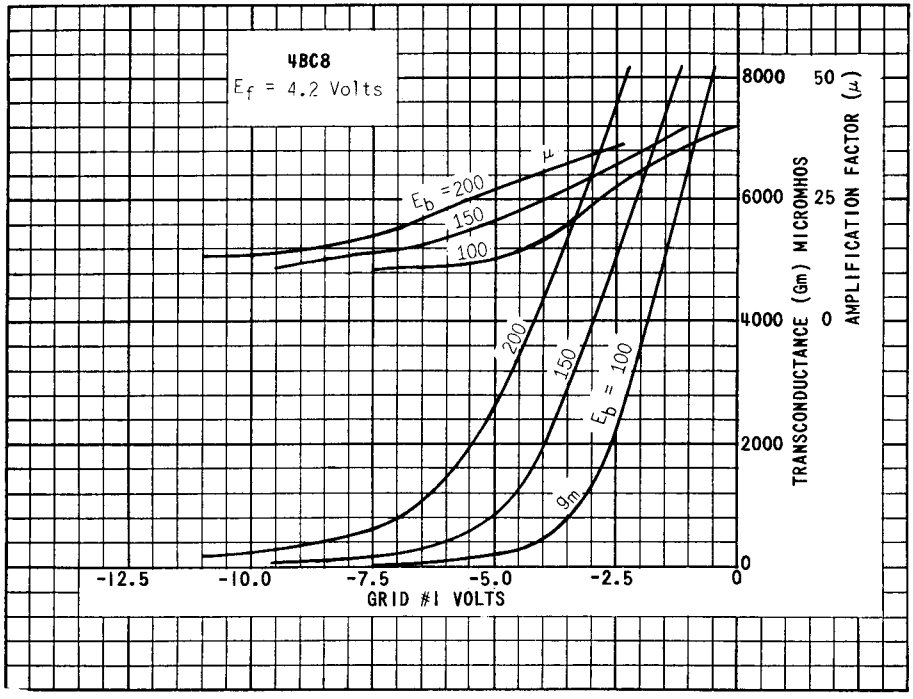
EACH UNIT

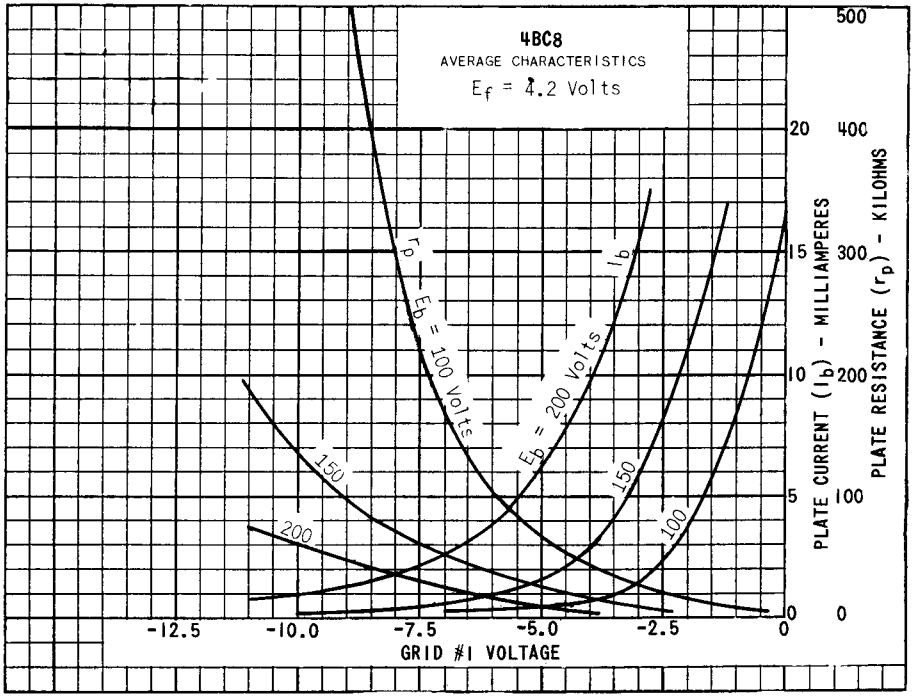
PLATE VOLTAGE	150	VOLTS
CATHODE RESISTOR	220	OHMS
PLATE RESISTANCE*	5300	OHMS
TRANSCONDUCTANCE	6200	μMHOS
AMPLIFICATION FACTOR	35	
PLATE CURRENT	10	MA.
GRID VOLTAGE (APPROX.) FOR GM =50 μMHOS	-13	VOLTS

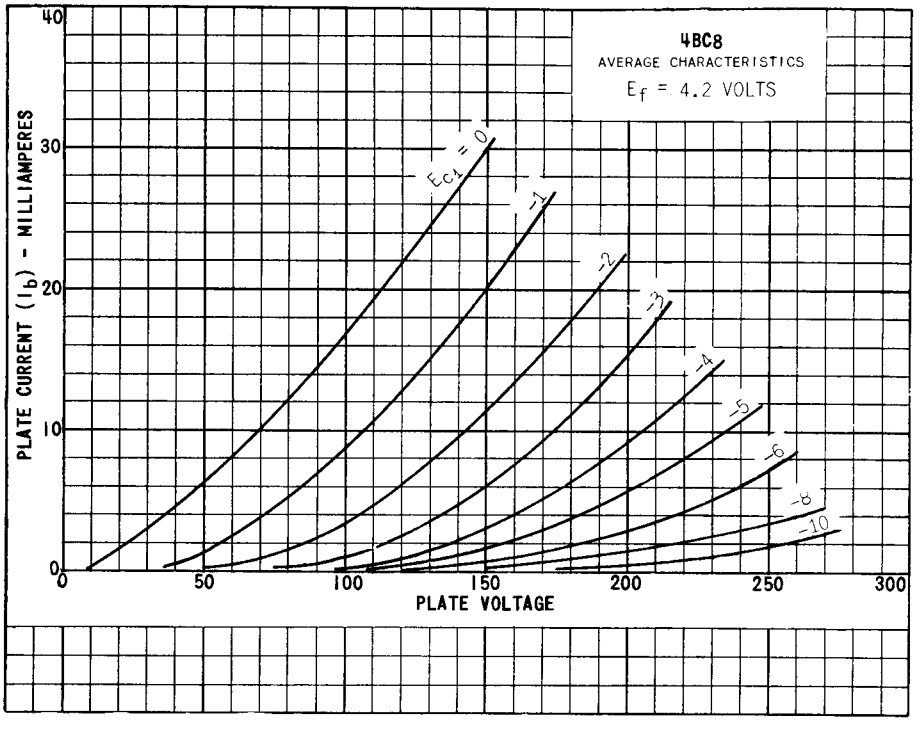
[B] THIS RATING MAY BE AS HIGH AS 300 VOLTS UNDER CUTOFF CONDITIONS WHEN THE TUBE IS USED AS A CASCODE AMPLIFIER AND THE TWO SECTIONS ARE CONNECTED IN SERIES.

[C] 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.

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.






4BC8
AVERAGE CHARACTERISTICS
E_f = 4.2 VOLTS
PLATE CURRENT (I_b) - MILLIAMPERES
PLATE VOLTAGE
E_{c1} = 0
-1
-2
-3
-4
-5
-6
-8
-10
0
10
20
30
40
0
50
100
150
200
250
300