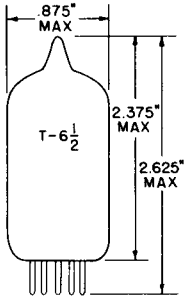
TUNG-SOL

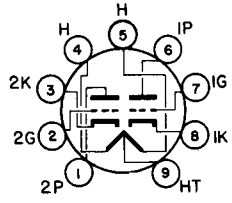
DOUBLE TRIODE



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

FOR USE AS A VERTICAL DEFLECTION SWEEP GENERATOR AND DEFLECTION AMPLIFIER IN T.V. RECEIVERS

ANY MOUNTING POSITION



BOTTOM VIEW
BASING DIAGRAM
JEDEC 9A

THE 12BH7A COMBINES TWO INDEPENDENT SEMI-HIGH PERVEANCE, MEDIUM-MU TRIODES IN THE 9 PIN MINIATURE CONSTRUCTION. IT IS SUITABLE FOR USE AS A VERTICAL DEFLECTION SWEEP GENERATOR AND DEFLECTION AMPLIFIER IN 600 MA. SERIES HEATER OPERATED TELEVISION RECEIVERS WHICH USE PICTURE TUBES WITH WIDE DEFLECTION ANGLES. 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

	WITH[A] SHIELD	WITHOUT SHIELD	
TRIODE UNIT 1			
GRID TO PLATE: G TO P	2.4	→ 2.6	pf
INPUT: G TO (H+K)	3.3	→ 3.2	pf
OUTPUT: P TO (H+K)	2.0	→ 0.5	pf
TRIODE UNIT 2			
GRID TO PLATE: G TO P	2.4	→ 2.6	pf
INPUT: G TO (H+K)	3.3	→ 3.2	pf
OUTPUT: P TO (H+K)	2.0	→ 0.4	pf
COUPLING: #1 PLATE TO #2 PLATE	----	→ 0.8	pf
	0.6		

[A] WITH SHIELD #315 CONNECTED TO CATHODE OF UNIT UNDER TEST.

CONTINUED ON FOLLOWING PAGE

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CONTINUED FROM PRECEDING PAGE

HEATER CHARACTERISTICS AND RATINGS

DESING MAXIMUM VALUES - SEE EIA STANDARD RS-239

AVERAGE CHARACTERISTICS			
WITH HEATER CONNECTION	PARALLEL	SERIES	
USING BASE PINS	9 & 4 + 5	4 & 5	
HEATER SECTIONS			
VOLTAGE	6.3	12.6	VOLTS
CURRENT	600	300	MA.
HEATER WARM-UP TIME	11	11	SECONDS
HEATER SUPPLY LIMTS:			
VOLTAGE OPERATION	6.3+0.6	12.6+1.3	VOLTS
CURRENT OPERATION	600+40	300+20	MA.
MAXIMUM HEATER CATHODE VOLTAGE:			
HEATER NEGATIVE WITH RESPECT TO CATHODE			
DC AND PEAK	200		VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE			
DC	100		VOLTS
DC AND PEAK	200		VOLTS

→ MAXIMUM RATINGS

DESIGN CENTER VALUES - SEE EIA STANDARD RS-239

VALUES ARE FOR EACH UNIT	CLASS A1 AMPLIFIER	VER. DEF.[B] AMPLIFIER (VALUES ARE FOR EACH UNIT)	
DC PLATE VOLTAGE	300	450	VOLTS
PEAK POSITIVE PULSE PLATE VOLTAGE	----	1500 (ABS. MAX.)	VOLTS
PEAK NEGATIVE PULSE GRID VOLTAGE	----	250	VOLTS
NEGATIVE DC GRID VOLTAGE	-50		VOLTS
CATHODE CURRENT	20		MA.
AVERAGE CATHODE CURRENT		20	MA.
PEAK CATHODE CURRENT		70	MA.
PLATE DISSIPATION:			
EACH PLATE	3.5 (EA. UNIT)	3.5[C]	WATTS
BOTH PLATES	70 (EA. UNIT)	7.0[C]	WATTS
GRID CIRCUIT RESISTANCE:			
CATHODE BIAS	1.0	2.2	MEGOHMS
FIXED BIAS	0.25		MEGOHM

VALUES ARE FOR EACH UNIT

	VER. DEF.[B] OSCILLATOR *	HORIZONTAL[B] DEF. OSC. *	
DC PLATE VOLTAGE	450	450	VOLTS
PEAK NEGATIVE GRID VOLTAGE	400	600	VOLTS
AVERAGE CATHODE CURRENT	20	20	MA.
PEAK CATHODE CURRENT	70	300	MA.
PLATE DISSIPATION			
EACH PLATE	3.5	3.5	WATTS
BOTH PLATES	7.0	7.0	WATTS
GRID CIRCUIT RESISTANCE:			
FIXED BIAS GRID-RESISTOR, OR CATHODE BIAS	2.2	2.2	MEGOHMS

*INDICATES AN ADDITION.
→ NDICATES A CHANGE.

CONTINUED ON FOLLOWING PAGE

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

EACH UNIT*

PLATE RESISTANCE (APPROX.)	5300	OHMS
PLATE CURRENT FOR GRID VOLTAGE OF -14 VOLTS	4	MA.
GRID VOLTAGE (APPROX.) FOR PLATE CURRENT OF 50 μA AT 250 VOLTS	-23	VOLTS

CLASS A_1 AMPLIFIER

PLATE VOLTAGE	250	VOLTS
GRID VOLTAGE	-10.5	VOLTS
AMPLIFICATION FACTOR	17	
TRANSCONDUCTANCE (EACH UNIT)	3100	μMHOS
PLATE CURRENT (EACH UNIT)	11.5	MA.
GRID VOLTAGE (APPROX.) FOR I_b = 50 μA AT E_b = 150 (EACH UNIT)	-17	VOLTS

[B] FOR OPERATION IN A 525-LINE 30-FRAME SYSTEM AS DESCRIBED IN 'STANDARDS OF GOOD ENGINEERING PRACTICE FOR TELEVISION BROADCASTING STATIONS; FEDERAL COMMUNICATIONS COMMISSION'. THE DUTY CYCLE OF THE VOLTAGE PULSE NOT TO EXCEED 15 PERCENT OF A SCANNING CYCLE.

[C] 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.

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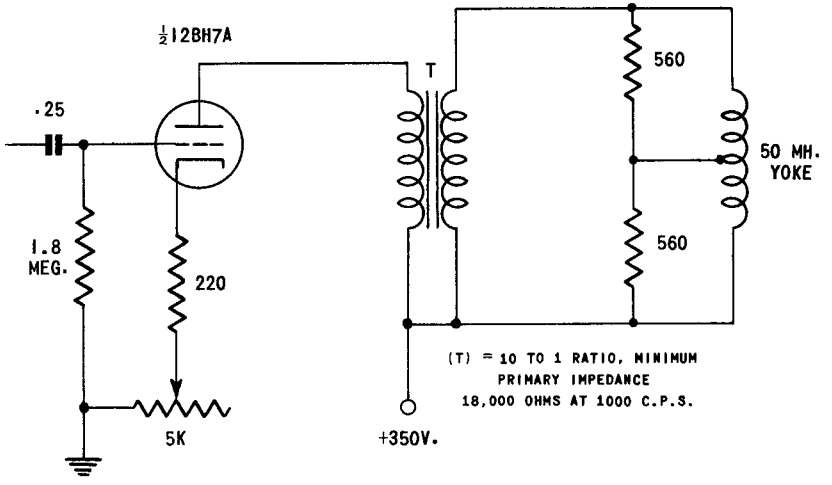
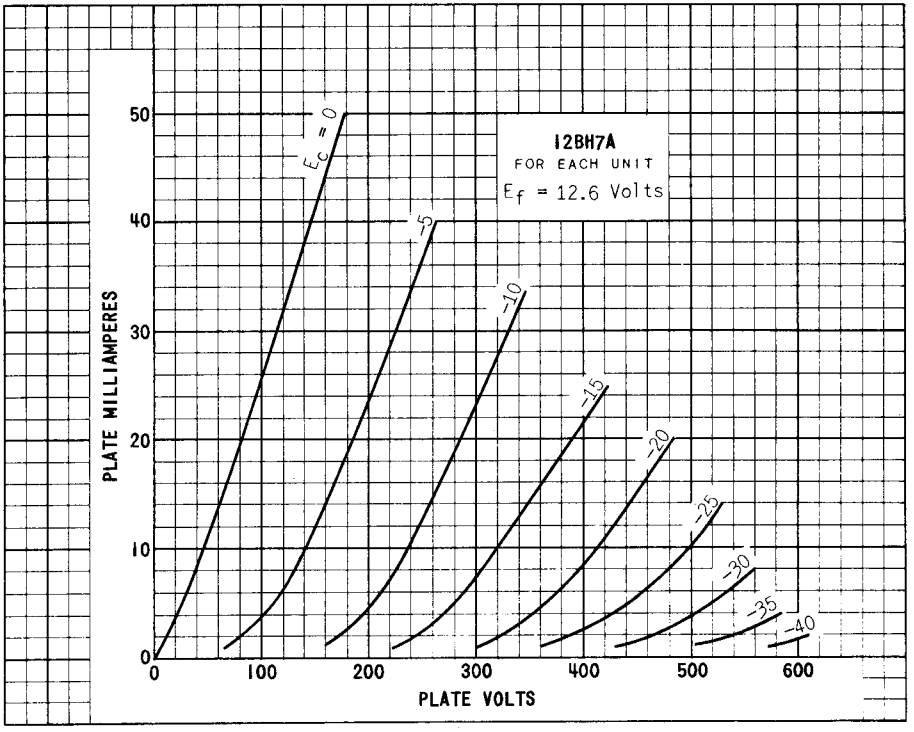

½12BH7A
.25
1.8 MEG.
220
5K
T
560
560
50 MH. YOKE
(T) = 10 TO 1 RATIO, MINIMUM PRIMARY IMPEDANCE 18,000 OHMS AT 1000 C.P.S.
+350V.


12BH7A
FOR EACH UNIT
Ef = 12.6 Volts
Ec = 0
-5
-10
-15
-20
-25
-30
-35
-40
PLATE MILLIAMPERES
0
10
20
30
40
50
0
100
200
300
400
500
600
PLATE VOLTS