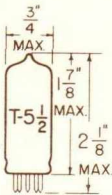


TUNG-SOL

PENTODE

MINIATURE TYPE



GLASS BULB

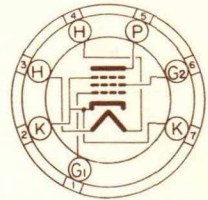
COATED UNIPOTENTIAL CATHODE

HEATER

4.2 VOLTS 0.45 AMP.

AC OR DC

ANY MOUNTING POSITION



BOTTOM VIEW

MINIATURE BUTTON
7 PIN BASE

780

THE 4BC5, A HIGH TRANSCONDUCTANCE PENTODE VOLTAGE AMPLIFIER IN THE 7 PIN MINIATURE CONSTRUCTION, IS DESIGNED FOR USE IN 450 MA. SERIES HEATER OPERATED RECEIVERS. IT IS USEFUL AS AN RF AMPLIFIER UP TO ABOUT 400 MC. AND AS A HIGH-FREQUENCY INTERMEDIATE AMPLIFIER. 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. WITH THE EXCEPTION OF HEATER RATINGS, ITS CHARACTERISTICS ARE IDENTICAL TO TYPE 6BC5.

DIRECT INTERELECTRODE CAPACITANCES

	WITH SHIELD ^A	WITHOUT SHIELD	
PENTODE CONNECTION:			
GRID TO PLATE: (G_1 TO P)	0.02	0.03	$\mu\mu\text{f}$
INPUT: G_1 TO (H+K+ G_2 + G_3 +IS)	6.6	6.5	$\mu\mu\text{f}$
OUTPUT: P TO (H+K+ G_2 + G_3 +IS)	3.1	1.8	$\mu\mu\text{f}$
TRIODE CONNECTION: (G_2 TIED TO PLATE)			
GRID TO PLATE: (G_1 TO P+ G_2)	2.5	2.5	$\mu\mu\text{f}$
INPUT: G_1 TO (H+K+ G_3 +IS)	4	3.9	$\mu\mu\text{f}$
OUTPUT: P+ G_2 TO (H+K+ G_3 +IS)	4.3	3	$\mu\mu\text{f}$

^A EXTERNAL SHIELD #316 CONNECTED TO PIN #7.

RATINGS

INTERPRETED ACCORDING TO DESIGN CENTER SYSTEM

	TRIODE ^B 4.2	PENTODE 4.2	VOLTS
HEATER VOLTAGE			
MAXIMUM PEAK HEATER-CATHODE VOLTAGE:			
HEATER NEGATIVE WITH RESPECT TO CATHODE	200	200	VOLTS
TOTAL DC AND PEAK	100	100	VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE	200	200	VOLTS
DC	300	300	VOLTS
TOTAL DC AND PEAK	---	150	VOLTS
MAXIMUM PLATE VOLTAGE	---	300	VOLTS
MAXIMUM GRID #2 VOLTAGE	---	300	VOLTS
MAXIMUM GRID #2 SUPPLY VOLTAGE	---	2	WATTS
MAXIMUM PLATE DISSIPATION	2.5 ^C	0.5	WATT
MAXIMUM GRID #2 DISSIPATION	---	0	VOLTS
MAXIMUM POSITIVE DC GRID #1 VOLTAGE	0	11.0	SECONDS
HEATER WARM-UP TIME (APPROX.)*			

^A TRIODE CONNECTION: G_2 CONNECTED TO PLATE.

^B TOTAL DISSIPATION FOR PLATE PLUS SCREEN.

*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.

TUNG-SOL

CONTINUED FROM PRECEDING PAGE

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

CLASS A₁ AMPLIFIER - PENTODE CONNECTION

HEATER VOLTAGE	4.2	4.2	4.2	VOLTS
HEATER CURRENT	0.45	0.45	0.45	AMP.
PLATE VOLTAGE	100	125	250	VOLTS
GRID #2 VOLTAGE	100	125	150	VOLTS
CATHODE RESISTOR	180	100	180	OHMS
PLATE RESISTANCE (APPROX.)	0.6	0.5	0.8	MEGOHM
TRANSCONDUCTANCE	4900	6100	5700	μMHOS
PLATE CURRENT	4.7	8	7.5	MA.
GRID #2 CURRENT	1.4	2.4	2.1	MA.
GRID #1 VOLTAGE (APPROX.) FOR I _{b2} = 10 μA.	-5	-6	-8	VOLTS

CLASS A₁ AMPLIFIER - TRIODE CONNECTION^B

HEATER VOLTAGE	4.2	4.2	VOLTS
HEATER CURRENT	0.45	0.45	AMP.
PLATE VOLTAGE	250	180	VOLTS
CATHODE RESISTOR	820	330	OHMS
PLATE RESISTANCE (APPROX.)	0.009	0.006	MEGOHM
TRANSCONDUCTANCE	4400	6000	μMHOS
PLATE CURRENT	6	8	MA.
AMPLIFICATION FACTOR	40	42	

^B TRIODE CONNECTION G₂ CONNECTED TO PLATE.

4BC5

PENTODE CONNECTION

E_f = 4.2 Volts
E_b = 250 Volts

