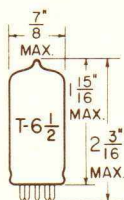


TUNG-SOL

DOUBLE TRIODE

MINIATURE TYPE



GLASS BULB

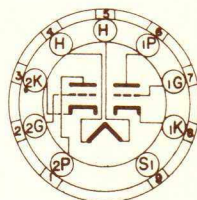
COATED UNIPOTENTIAL CATHODE

HEATER

4.2 VOLTS 0.6 AMP.

AC OR DC

ANY MOUNTING POSITION



BOTTOM VIEW

MINIATURE BUTTON
9 PIN NOVAL

9AU

THE 4BQ7A, A MEDIUM- μ DOUBLE TRIODE USING THE 9 PIN MINIATURE CONSTRUCTION, IS DESIGNED FOR USE IN 600 MA. SERIES HEATER OPERATED RECEIVERS. IT IS INTENDED FOR SERVICE AS THE FIRST RF AMPLIFIER TUBE IN TUNERS OF VHF TELEVISION RECEIVERS OR AS A LOW NOISE IF PRE-AMPLIFIER TUBE IN UHF TELEVISION RECEIVERS EMPLOYING A CRYSTAL MIXER. HIGH TRANSCONDUCTANCE, LOW INPUT CAPACITANCE, LOW INPUT LOADING, AND LOW PLATE TO CATHODE CAPACITANCE MAKE IT SPECIALLY USEFUL IN THE DIRECT-COUPLED RF STAGE OF TELEVISION RECEIVERS UTILIZING A DRIVEN RF-GROUNDED-GRID AMPLIFIER FOR THE CASCODE TYPE OF CIRCUIT. 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. WITH THE EXCEPTION OF HEATER RATINGS, ITS CHARACTERISTICS ARE IDENTICAL TO THE 6BQ7A.

DIRECT INTERELECTRODE CAPACITANCES

WITH EXTERNAL SHIELD #315

	UNIT #1	UNIT #2	
GRID TO PLATE	1.15	1.15	$\mu\mu f$
INPUT	2.85	----	$\mu\mu f$
INPUT (GROUNDED GRID)	----	4.95	$\mu\mu f$
OUTPUT	1.35	----	$\mu\mu f$
OUTPUT (GROUNDED GRID)	----	2.27	$\mu\mu f$
PLATE TO CATHODE (MAX.)	0.15	0.15	$\mu\mu f$
HEATER TO CATHODE	2.65	2.70	$\mu\mu f$
PLATE OF UNIT #1 TO PLATE OF UNIT #2 (MAX.)	0.010		$\mu\mu f$
PLATE OF UNIT #2 TO PLATE AND GRID OF UNIT #1 (MAX.)	0.024		$\mu\mu f$

RATINGS

INTERPRETED ACCORDING TO DESIGN CENTER VALUES

CLASS A₁ AMPLIFIER - EACH TRIODE UNIT

HEATER VOLTAGE	4.2	VOLTS
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	250 ^A	VOLTS
MAXIMUM PLATE DISSIPATION	2	WATTS
MAXIMUM CATHODE CURRENT	20	MA.
MAXIMUM GRID CIRCUIT RESISTANCE	0.5	MEGOMH
HEATER WARM-UP TIME (APPROX.)*	11.0	SEC.

^A UNDER CUT-OFF CONDITIONS, IN RF-GROUNDED-GRID CIRCUITS WITH DIRECT-COUPLED DRIVE, IT IS PERMISSIBLE FOR THIS VOLTAGE TO BE AS HIGH AS 300 VOLTS.

* 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.

CONTINUED ON FOLLOWING PAGE

→ INDICATES A CHANGE.

TUNG-SOL

CONTINUED FROM PRECEDING PAGE

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

CLASS A₁ AMPLIFIER - EACH UNIT

	DESIGN CENTER VALUES	
HEATER VOLTAGE	4.2	VOLTS
HEATER CURRENT	0.6	AMP.
PLATE VOLTAGE	150	VOLTS
CATHODE BIAS RESISTOR	220	OHMS
AMPLIFICATION FACTOR	39	
PLATE RESISTANCE	6 100	OHMS
TRANSCONDUCTANCE	6 400	μMHOS
PLATE CURRENT	9	MA.
GRID VOLTS (APPROX.) FOR $I_b = 10 \mu\text{AMP.}$	-10	VOLTS

PUSH-PULL RF GROUNDED GRID CIRCUIT - EACH UNIT

HEATER VOLTAGE	4.2	VOLTS
HEATER CURRENT	0.6	AMP.
PLATE VOLTAGE	150	VOLTS
GRID VOLTAGE (OBTAINED FROM CATHODE RESISTOR)	-2	VOLTS
CATHODE RESISTOR (COMMON TO BOTH UNITS)	100	OHMS
PLATE CURRENT	10	MA.

RF GROUNDED GRID CIRCUIT WITH DIRECT-COUPLED DRIVE

UNIT #1 (DRIVER TUBE) IS DIRECTLY COUPLED TO UNIT #2 (DRIVEN RF-GROUNDED-GRID AMPLIFIER TUBE) AS SHOWN IN ACCOMPANYING CIRCUIT.

	UNIT #1	UNIT #2	
HEATER VOLTAGE	4.2	4.2	VOLTS
HEATER CURRENT	0.6	0.6	AMP.
PEAK HEATER CATHODE VOLTAGE: HEATER NEGATIVE WITH RESPECT TO CATHODE	1	250	VOLTS
PLATE SUPPLY VOLTAGE	250	250	VOLTS
PLATE VOLTAGE	135	115	VOLTS
GRID VOLTAGE	-1	---	VOLTS
GRID RESISTOR	---	0.5	MEGOHM
PLATE CURRENT	10	10	MA.
GRID CURRENT	0	0	MA.
GRID VOLTAGE (APPROX.) FOR $I_b = 10 \mu\text{AMP.}$	-14	---	VOLTS

