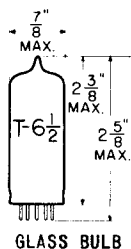


TUNG-SOL

TRIODE
MINIATURE TYPE

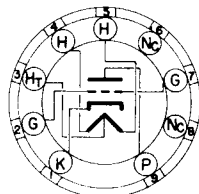
COATED UNIPOTENTIAL CATHODE

HEATER

 12.6 VOLTS 6.3 VOLTS
 300 MA. 600 MA.

AC OR DC

ANY MOUNTING POSITION


 BOTTOM VIEW
 MINIATURE BUTTON
 9 PIN BASE

9AG

THE 12A4 IS A HIGH PERVEANCE, MEDIUM-MU TRIODE USING THE 9 PIN MINIATURE CONSTRUCTION. IT IS DESIGNED FOR USE IN TELEVISION RECEIVERS AND OTHER APPLICATIONS WHERE HIGH PEAK CURRENT MUST BE DEVELOPED WITH A LOW VOLTAGE POWER SUPPLY. THE HIGH PERVEANCE IS SUCH AS TO MAKE IT SUITABLE FOR USE AS A VERTICAL DEFLECTION AMPLIFIER IN TELEVISION RECEIVERS USING LARGE DEFLECTION ANGLES AND HAVING LOW PLATE SUPPLY POTENTIALS.

DIRECT INTERELECTRODE CAPACITANCES

WITH SHIELD #315

GRID TO PLATE: (G TO P)	4.9	μ f
INPUT: G TO (H+K)	6.7	μ f
OUTPUT: P TO (H+K)	3.8	μ f

RATINGS

INTERPRETED ACCORDING TO RMA STANDARD M8-210

	CLASS A AMPLIFIER	VERTICAL DEFLECTION AMPLIFIER	
HEATER VOLTAGE	12.6 6.3	12.6 6.3	VOLTS
MAXIMUM HEATER-CATHODE VOLTAGE	180	180	VOLTS
MAXIMUM DC PLATE VOLTAGE	450	450	VOLTS
MAXIMUM PEAK POSITIVE PULSE PLATE VOLTAGE ^{BC}	—	1000	VOLTS
MAXIMUM NEGATIVE DC GRID VOLTAGE	-50	-50	VOLTS
MAXIMUM PEAK NEGATIVE PULSE GRID VOLTAGE ^A	—	-100	VOLTS
MAXIMUM PLATE DISSIPATION ^B	6.5	6.5	WATTS
MAXIMUM CATHODE CURRENT	40	30	MA.
MAXIMUM GRID CIRCUIT RESISTANCE (CATHODE BIAS) ^B	2.5	2.5	MEG OHMS
MAXIMUM GRID CIRCUIT RESISTANCE (FIXED BIAS) ^B	1.2	1.2	MEG OHMS

^A FOR OPERATION IN A 525-LINE, 30-FRAME SYSTEM AS DESCRIBED IN "STANDARDS OF GOOD ENGINEERING PRACTICE FOR TELEVISION BROADCAST STATIONS" FEDERAL COMMUNICATIONS COMMISSION. THE DUTY CYCLE OF THE VOLTAGE PULSE MUST NOT EXCEED 15% OF ONE SCANNING CYCLE OR APPROXIMATELY 2.5 MILLISECONDS.

^B THESE RATINGS ARE ON THE ABSOLUTE MAXIMUM SYSTEM! ABSOLUTE MAXIMUM RATINGS ARE THE LIMITING VALUES ABOVE WHICH THE SERVICEABILITY OF THE TUBE MAY BE IMPAIRED FROM THE VIEWPOINT OF LIFE AND SATISFACTORY PERFORMANCE. THEREFORE, IN ORDER NOT TO EXCEED THESE ABSOLUTE RATINGS, THE EQUIPMENT DESIGNER HAS THE RESPONSIBILITY OF DETERMINING AN AVERAGE DESIGN VALUE FOR EACH RATING BELOW THE ABSOLUTE VALUE OF THAT RATING BY AN AMOUNT SUCH THAT THE ABSOLUTE VALUES WILL NEVER BE EXCEEDED UNDER ANY USUAL CONDITION OF LINE VOLTAGE VARIATION, MANUFACTURING VARIATIONS (INCLUDING COMPONENTS) IN THE EQUIPMENT ITSELF, OR ADJUSTMENTS OF CONTROLS.

^C THE PEAKING RESISTOR INCORPORATED IN THE OSCILLATOR DISCHARGE CIRCUIT SHOULD BE CHOSEN SO THAT THIS RATING IS NOT EXCEEDED UNDER ANY CONDITION.

CONTINUED ON FOLLOWING PAGE

TUNG-SOL

CONTINUED FROM PRECEDING PAGE

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

CLASS A₁ AMPLIFIER

HEATER VOLTAGE	12.6	6.3	VOLTS
HEATER CURRENT	300	600	MA.
PLATE VOLTAGE		250	VOLTS
GRID VOLTAGE		-9	VOLTS
PLATE CURRENT		21	MA.
TRANSCONDUCTANCE		7800	μMHOS
AMPLIFICATION FACTOR		20	
GRID VOLTAGE (APPROX.) FOR $I_b = 50 \mu A$ AT $E_b = 500$		-33	VOLTS

VERTICAL DEFLECTION AMPLIFIER^A

HEATER VOLTAGE	12.6	6.3	VOLTS
HEATER CURRENT	300	600	MA.
DC PLATE VOLTAGE		250	VOLTS
GRID INPUT VOLTAGE (APPROX.)		25	VOLTS
PEAK-TO-PEAK SAWTOOTH COMPONENT		30	VOLTS
NEGATIVE PEAKING COMPONENT		15	MA.
DC PLATE CURRENT		15	MA.
PLATE OUTPUT VOLTAGE:			
PEAK POSITIVE PULSE COMPONENT		450	VOLTS
PEAK-TO-PEAK SAWTOOTH COMPONENT		220	VOLTS
PEAK-TO-PEAK SAWTOOTH CURRENT IN YOKE (50 MILLIHENRY INDUCTANCE)		360	MA.
CATHODE BIAS RESISTOR (VARIABLE)		560	OHMS

^AFOR OPERATION IN A 525-LINE, 30-FRAME SYSTEM AS DESCRIBED IN "STANDARDS OF GOOD ENGINEERING PRACTICE FOR TELEVISION BROADCAST STATIONS" FEDERAL COMMUNICATIONS COMMISSION. THE DUTY CYCLE OF THE VOLTAGE PULSE MUST NOT EXCEED 1% OF ONE SCANNING CYCLE OR APPROXIMATELY 2.5 MILLISECONDS.