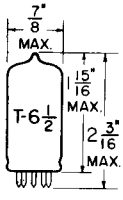
TUNG-SOL

TRIODE PENTODE

MINIATURE TYPE



GLASS BULB

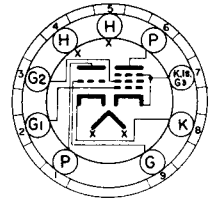
COATED UNIPOTENTIAL CATHODE

HEATER

4.6 VOLTS 0.60 AMP.

AC OR DC

ANY MOUNTING POSITION



BOTTOM VIEW

9DC

THE 4BL8 IS A TRIODE PENTODE IN THE 9 PIN MINIATURE CONSTRUCTION. IT IS DESIGNED FOR USE AS A FREQUENCY CHANGER IN TELEVISION RECEIVERS.

DIRECT INTERELECTRODE CAPACITANCES

PENTODE SECTION:		
INPUT CAPACITANCE	5.2	μμf
OUTPUT CAPACITANCE	3.4	μμf
PLATE TO GRID #1 (MAX.)	0.025	μμf
TRIODE SECTION		
INPUT CAPACITANCE	2.5	μμf
OUTPUT CAPACITANCE	1.8	μμf
PLATE TO GRID	1.5	μμf
BETWEEN PENTODE AND TRIODE SECTIONS		
PENTODE PLATE TO TRIODE PLATE (MAX.)	0.07	μμf
PENTODE PLATE TO TRIODE GRID (MAX.)	0.02	μμf
PENTODE GRID TO TRIODE PLATE (MAX.)	0.16	μμf

RATINGS

INTERPRETED ACCORDING TO DESIGN CENTER SYSTEM

PENTODE SECTION		
HEATER VOLTAGE	4.6	VOLTS
MAXIMUM PLATE VOLTAGE	250	VOLTS
MAXIMUM PLATE VOLTAGE WITHOUT CURRENT	550	VOLTS
MAXIMUM PLATE DISSIPATION	1.7	WATTS
MAXIMUM GRID #2 VOLTAGE AT A CATHODE CURRENT OF 14 MAMPS	175	VOLTS
MAXIMUM GRID #2 VOLTAGE AT A CATHODE CURRENT LESS THAN 10 MAMPS	200	VOLTS
MAXIMUM GRID #2 DISSIPATION AT A PLATE DISSIPATION MORE THAN 1.2 WATTS	0.75	WATT

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RATINGS - cont'd.

INTERPRETED ACCORDING TO DESIGN CENTER SYSTEM

PENTODE SECTION (CONT'D.)

MAXIMUM GRID #1 CIRCUIT RESISTANCE WITH AUTOMATIC BIAS	1	MEG.
MAXIMUM GRID #1 CIRCUIT RESISTANCE WITH FIXED BIAS	0.5	MEG.
MAXIMUM CATHODE CURRENT	14	MAMPS
MAXIMUM VOLTAGE BETWEEN HEATER AND CATHODE (CATHODE NEGATIVE WITH RESPECT TO HEATER)	100	VOLTS
MAXIMUM VOLTAGE BETWEEN HEATER AND CATHODE (CATHODE POSITIVE WITH RESPECT TO HEATER)	200[A]	VOLTS

TRIODE SECTION

HEATER VOLTAGE	4.6	VOLTS
MAXIMUM PLATE VOLTAGE	250	VOLTS
MAXIMUM PLATE VOLTAGE WITHOUT CURRENT	550	VOLTS
MAXIMUM PLATE DISSIPATION	1.5	WATTS
MAXIMUM GRID CIRCUIT RESISTANCE	0.5	MEG.
MAXIMUM VOLTAGE BETWEEN HEATER AND CATHODE (CATHODE NEGATIVE WITH RESPECT TO HEATER)	100	VOLTS
MAXIMUM VOLTAGE BETWEEN HEATER AND CATHODE (CATHODE POSITIVE WITH RESPECT TO HEATER)	200[A]	VOLTS
MAXIMUM CATHODE CURRENT	14	MAMPS.

[A] DC COMPONENT 120 VOLTS MAX.

TYPICAL CHARACTERISTICS

PENTODE SECTION

HEATER VOLTAGE	4.6	VOLTS
HEATER CURRENT	0.60	AMP.
PLATE VOLTAGE	170	VOLTS
GRID #2 VOLTAGE	170	VOLTS
GRID #1 BIAS	−2	VOLTS
PLATE CURRENT	10	MAMPS.
GRID #2 CURRENT	2.8	MAMPS.
TRANSCONDUCTANCE	6200	μMHOS
PLATE RESISTANCE	0.4	MEG.
AMPLIFICATION FACTOR OF GRID #2 WITH RESPECT TO GRID #1	47	
INPUT RESISTANCE AT 50MC	10 000	OHMS
EQUIVALENT NOISE RESISTANCE	1500	OHMS

TRIODE SECTION

HEATER VOLTAGE	4.6	VOLTS
HEATER CURRENT	0.60	AMP.
PLATE VOLTAGE	100	VOLTS
GRID VOLTAGE	−2	VOLTS
PLATE CURRENT	14	MAMPS.
TRANSCONDUCTANCE	5000	μMHOS
AMPLIFICATION FACTOR	20	

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OPERATING CHARACTERISTICS

FOR USE AS MIXER

HEATER VOLTAGE	4.6		VOLTS
HEATER CURRENT	0.60		AMP.
PLATE VOLTAGE	170	170	VOLTS
GRID #2 VOLTAGE	170	170	VOLTS
GRID #1 CIRCUIT RESISTANCE	0.1	0.1	MEG.
CATHODE RESISTOR	330	820	OHMS
OSCILLATOR VOLTAGE (RMS)	3.5	3.5	VOLTS
PLATE CURRENT	6.5	5.2	MAMPS
GRID #2 CURRENT	2.0	1.5	MAMPS.
GRID #1 CURRENT	20	0	μAMPS
CONVERSION CONDUCTANCE	2200	2100	μMHOS
PLATE RESISTANCE	0.8	0.87	MEG.

OPTIMUM PEAK CATHODE CURRENT OF THE TRIODE SECTION IN FRAME OUTPUT APPLICATION. TO ALLOW FOR TUBE SPREAD, FOR DETERIORATION DURING LIFE AND FOR EMISSION DROP AT UNDERHEATING THE SET SHOULD BE DESIGNED SO THAT WITH A PEAK CATHODE CURRENT OF 100 MA (MAX. PULSE DURATION 4% OF A CYCLE, WITH A MAXIMUM OF 0.8 MSEC.) IT STILL OPERATES SATISFACTORILY. IT IS RECOMMENDED THAT THE AMPLITUDE OF THE PEAK CURRENTS OCCURRING WITH FRESH TUBES BE LIMITED AUTOMATICALLY TO THIS MAX. VALUE OF 100 MA. (e.g. BY NON-BYPASSED RESISTANCES IN THE GRID LEAD).

NOTE: IT IS RECOMMENDED TO EMPLOY THE TRIODE IN A COLPITTS TYPE OF CIRCUIT AND NOT IN A HARTLEY TYPE.