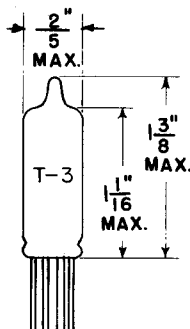


TUNG-SOL

TWIN DIODE

SUBMINIATURE TYPE



GLASS BULB

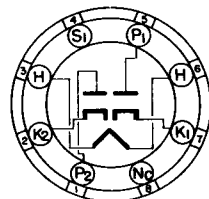
COATED UNIPOTENTIAL CATHODE

HEATER

6.3±5% VOLTS 0.3 AMP.

AC OR DC

ANY MOUNTING POSITION



BOTTOM VIEW

SUBMINIATURE BUTTON
8 LEAD BASE
8DJ

THE 5896 IS A SUBMINIATURE TWIN DIODE IN WHICH SEPARATE CATHODES ARE PROVIDED FOR THE TWO SECTIONS. EACH DIODE CAN BE USED INDEPENDENTLY OF THE OTHER OR COMBINED IN PARALLEL OR FULL-WAVE ARRANGEMENTS. IT IS SUITED FOR A WIDE VARIETY OF APPLICATIONS INCLUDING SERVICE AS A DETECTOR, AN AUTOMATIC-GAIN-CONTROL RECTIFIER, OR A LOW-CURRENT POWER RECTIFIER. THE RESONANT FREQUENCY OF EACH UNIT IS GREATER THAN 900 MEGACYCLES.

DIRECT INTERELECTRODE CAPACITANCES

	WITH SHIELD ^A	WITHOUT SHIELD	
PLATE #1 TO CATHODE #1, HEATER AND INTERNAL SHIELD	3.0	2.4	μμf
PLATE #2 TO CATHODE #2, HEATER, AND INTERNAL SHIELD	3.0	2.4	μμf
CATHODE #1 TO PLATE #1, HEATER AND INTERNAL SHIELD	4.2	4.0	μμf
CATHODE #2 TO PLATE #2, HEATER AND INTERNAL SHIELD	4.2	4.0	μμf
PLATE #1 TO PLATE #2, MAXIMUM	0.026	0.15	μμf

^A WITH EXTERNAL SHIELD OF 0.405 INCH INSIDE DIAMETER CONNECTED TO LEAD 3.

RATINGS

ABSOLUTE MAXIMUM VALUES

HEATER VOLTAGE	6.3±5%	VOLTS
MAXIMUM PEAK INVERSE PLATE VOLTAGE	460	VOLTS
MAXIMUM AC PLATE-SUPPLY VOLTAGE PER PLATE, RMS	165	VOLTS
MAXIMUM STEADY-STATE PEAK PLATE CURRENT PER PLATE	60	MA.
MAXIMUM TRANSIENT PEAK PLATE CURRENT PER PLATE,		
MAXIMUM DURATION 0.2 SECOND	350	MA.
MAXIMUM DC OUTPUT CURRENT PER PLATE	10	MA.
MAXIMUM HEATER-CATHODE VOLTAGE:		
HEATER POSITIVE WITH RESPECT TO CATHODE	360	VOLTS
HEATER NEGATIVE WITH RESPECT TO CATHODE	360	VOLTS
MAXIMUM BULB TEMPERATURE AT HOTTEST POINT	250	C

CONTINUED ON FOLLOWING PAGE

TUNG-SOL

CONTINUED FROM PRECEDING PAGE

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

FULL-WAVE RECTIFIER WITH CAPACITOR-INPUT FILTER

HEATER VOLTAGE	6.3±5%	VOLTS
HEATER CURRENT	0.3	AMPS.
AC PLATE-SUPPLY VOLTAGE PER PLATE, RMS	150	VOLTS
FILTER INPUT CAPACITOR	8	μFARADS
TOTAL EFFECTIVE PLATE-SUPPLY IMPEDANCE PER PLATE	300	OHMS
LOAD RESISTANCE	11000	OHMS
DC OUTPUT CURRENT	18	MA.
TUBE VOLTAGE DROP		
$i_b=18$ MA. DC PER PLATE	4.5	VOLTS
RESONANT FREQUENCY (WITH SHORT AT TUBE BASE), MIN.	900	MEGACY.

CHARACTERISTICS LIMITS

		MIN	MAX	
HEATER CURRENT:				
$E_f = 6.3$ VOLTS	INITIAL	275	325	MA.
OPERATION CURRENT:				
(DC OUTPUT CURRENT FROM FW RECTIFIER)				
$E_f = 6.3$ VOLTS, E_{bb} PER PLATE = 165 VOLTS				
RMS, $C_L = 8$ μf., R_L AND R_s PER PLATE AD-				
JUSTED WITH A TUBE HAVING A 10-VOLT DROP AT				
50 ma. PER PLATE FOR $i_o = 18$ ma. AND PEAK				
$i_b = 50$ ma APPROXIMATELY	INITIAL	16	---	MA.
	500 HR. ^A	14	---	MA.
EMISSION CURRENT, EACH SECTION				
$E_f = 6.3$ VOLTS $E_b = 10$ VOLTS	INITIAL	30	---	MA.
PLATE CURRENT, EACH SECTION:				
$E_f = 6.3$ VOLTS, $E_{bb} = 0$ VOLTS				
$R_L = 40000$ OHMS (INCLUDING				
METER RESISTANCE)	INITIAL	5	25	μAMPS.
PLATE CURRENT DIFFERENCE BETWEEN SECTIONS:				
DIFFERENCE BETWEEN PLATE CURRENTS				
FOR EACH SECTION AT $E_f = 6.3$ VOLTS, $E_{bb} =$				
0 VOLTS, $R_L = 40000$ OHMS (INCLUDING				
METER RESISTANCE)	INITIAL	---	5	μAMPS.
INTERELECTRODE CAPACITANCES:				
PLATE INPUT (P TO K, H, I.S.) EA. SECTION	INITIAL	2.5	3.5	μμf
CATHODE INPUT (K TO P, H, I.S.) EA. SECT.	INITIAL	3.5	4.9	μμf
PLATE TO PLATE (P TO P)	INITIAL	---	0.026	μμf
(MEASURED WITH EXTERNAL SHIELD OF 0.405 INCH INSIDE DIAMETER CONNECTED TO LEAD 3.)				
HEATER-CATHODE LEAKAGE CURRENT, EA. SEC.				
$E_f = 6.3$ VOLTS, $E_{bk} = 360$ VOLTS				
HEATER POSITIVE WITH RESPECT				
TO CATHODE	INITIAL	---	40	μAMPS.
	500 HR. ^A	---	120	μAMPS.
HEATER NEGATIVE WITH RESPECT				
TO CATHODE	INITIAL	---	40	μAMPS.
	500 HR. ^A	---	120	μAMPS.

CONTINUED ON FOLLOWING PAGE

TUNG-SOL

CONTINUED FROM PRECEDING PAGE

CHARACTERISTICS LIMITS - cont'd.

	MIN	MAX
INTERELECTRODE LEAKAGE RESISTANCE: E _f = 6.3 VOLTS, POLARITY OF APPLIED DC INTERELECTRODE VOLTAGE IS SUCH THAT NO CATHODE EMISSION RESULTS PLATE (EACH SECTION) TO ALL AT 300 VOLTS DC	INITIAL	100 --- MEGOHMS

- A. CONDITIONS OF LIFE-TEST OPERATION AS A FULL-WAVE RECTIFIER ARE E_f = 6.3 VOLTS, E_{bb} PER PLATE = 165 VOLTS RMS, C_i = 8 μ f, R_i AND R_a PER PLATE ADJUSTED WITH A TUBE HAVING A 10-VOLT DROP AT 50 MA PER PLATE FOR I_o = 18 MA AND PEAK I_B = 50 MA APPROXIMATELY, E_{hk} = E_o + 117 VOLTS RMS SO PHASED THAT THE 117 VOLTS AND E_f SUBTRACT, AND AMBIENT TEMPERATURE = 175 C.

SPECIAL TESTS AND RATINGS

INOPERATIVES CONTROL:

MINIMUM CONTINUOUS OPERATING TIME UNDER LIFE-TEST
CONDITIONS OR EQUIVALENT FOR ALL TUBES PRIOR TO
CHARACTERISTICS TESTING

46 HOURS

HEATER-CYCLING RATING:

CYCLES OF INTERMITTENT OPERATION, MINIMUM

E_f = 7.0 VOLTS CYCLED FOR ONE MINUTE ON AND FOUR MINUTES OFF.

E_b = 0 VOLTS. E_{bk} = 140 VOLTS RMS.

2500 CYCLES

SHOCK RATING:

IMPACT ACCELERATION IN ANY DIRECTION

FORCES AS APPLIED BY THE NAVY-TYPE, HIGH IMPACT (FLYWEIGHT)

SHOCK MACHINE FOR ELECTRONIC DEVICES OR ITS EQUIVALENT

450 G

FATIGUE RATING:

VIBRATIONAL ACCELERATION IN ANY DIRECTION

VIBRATIONAL FORCES FOR A PERIOD OF AT LEAST 100 HOURS AT A
FREQUENCY OF 60 CYCLES PER SECOND.

2.5 G

UNIFORM ACCELERATION RATING

UNIFORM ACCELERATION IN ANY DIRECTION

FORCES APPLIED GRADUALLY AS IN A CENTRIFUGE

1000 G

NOTE:

THE CONDITIONS FOR SOME OF THE INDICATED TESTS HAVE DELIBERATELY BEEN SELECTED TO AGGRAVATE TUBE FAILURES FOR TEST AND EVALUATION PURPOSES. IN NO SENSE SHOULD THESE CONDITIONS BE INTERPRETED AS SUITABLE CIRCUIT OPERATING CONDITIONS.

IN THE DESIGN OF MILITARY EQUIPMENT EMPLOYING THIS TUBE, REFERENCE SHOULD BE MADE TO APPROPRIATE MIL-E-1 SPECIFICATION.

