



ELECTRON TUBE DEPARTMENT ■ COMPONENTS DIVISION
INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION, CLIFTON, NEW JERSEY

KUTHE
5958-5959
HYDROGEN
THYRATRON

DESCRIPTION:

THE TUBES OF THIS GROUP ARE UNIPOTENTIAL CATHODE, THREE ELEMENT HYDROGEN FILLED THYRATRONS DESIGNED FOR NETWORK DISCHARGE SERVICE. IN SUCH SERVICE THEY ARE SUITABLE FOR PRODUCING PULSE OUTPUTS OF MORE THAN 120 KW AT AN AVERAGE POWER OF MORE THAN 150 WATTS. THEY ARE ESPECIALLY SUITABLE FOR COMPACT, AIRBORNE RADAR SYSTEMS.

THE SPECIAL FEATURES OF THIS GROUP OF TUBES INCLUDE THE HIGH PEAK VOLTAGE AND CURRENT RATINGS IN A VERY COMPACT SIZE.

ELECTRICAL DATA, GENERAL:

	<u>NOM.</u>	<u>MIN.</u>	<u>MAX.</u>	
HEATER VOLTAGE	6.3	5.9	6.7	VOLTS A.C.
HEATER CURRENT (AT 6.3 VOLTS)		2.0	2.5	AMPERES
MINIMUM HEATING TIME				2 MINUTES

MECHANICAL DATA, GENERAL:

MOUNTING POSITION	ANY
BASE	PER OUTLINE
ANODE CAP	PER OUTLINE
COOLING (NOTE 1)	
NET WEIGHT	4 OUNCES
DIMENSIONS	PER OUTLINE

KUTHE
5958-5959
HYDROGEN
THYRATRON

- 2 -

RATINGS:

MAX. PEAK ANODE VOLTAGE, FORWARD	8.0	KILOVOLTS
MAX. PEAK ANODE VOLTAGE, INVERSE (NOTE 2)	8.0	KILOVOLTS
MIN. ANODE SUPPLY VOLTAGE	2.5	KILOVOLTS D.C.
MAX. PEAK ANODE CURRENT	35	AMPERES
MAX. AVERAGE ANODE CURRENT	45	MILLIAMPERES
MAX. RMS ANODE CURRENT (NOTE 3)	1.25	AMPERES A.C.
MAX. EPY X IB X PRR	0.75 X 10 ⁹	
MAX. ANODE CURRENT RATE OF RISE	1200	AMPERES/USECOND
PEAK TRIGGER VOLTAGE (NOTE 4)		
MAX. PEAK INVERSE TRIGGER VOLTAGE	200	VOLTS
MAX. ANODE DELAY TIME (NOTE 5)	0.6	MICROSECOND
MAX. ANODE DELAY TIME DRIFT	0.15	MICROSECOND
MAX. TIME JITTER (NOTE 6)	0.03	MICROSECOND (INITIAL)
	0.04	USECOND
		(END OF LIFE)
AMBIENT TEMPERATURE	-50° TO 490°	CENT.

TYPICAL OPERATION AS PULSE MODULATOR, DC RESONANT CHARGING:

PEAK NETWORK VOLTAGE	8.0	KILOVOLTS
PULSE REPETITION RATE	2800	PULSES/SECOND
PULSE LENGTH	.25	MICROSECOND
PULSE FORMING NETWORK IMPEDANCE	119	OHMS
TRIGGER VOLTAGE	175	VOLTS
PEAK POWER OUTPUT (RESISTIVE LOAD 92% ZN)	130	KILOWATTS
PEAK ANODE CURRENT	35	AMPERES
AVERAGE ANODE CURRENT	.025	AMPERES D.C.

NOTE 1:

COOLING IS PERMITTED. HOWEVER, THERE SHALL BE NO AIR BLAST DIRECTLY ON THE BULB.

NOTE 2:

IN PULSED OPERATION, THE PEAK INVERSE VOLTAGE, EXCLUSIVE OF A SPIKE OF 0.05 MICROSECOND MAXIMUM DURATION, SHALL NOT EXCEED 2.5 KV DURING THE FIRST 25 MICROSECONDS AFTER THE PULSE.

NOTE 3:

THE ROOT MEAN SQUARE ANODE CURRENT SHALL BE COMPUTED AS THE SQUARE ROOT OF THE PRODUCT OF THE PEAK CURRENT AND THE AVERAGE CURRENT.

NOTE 4:

THE VOLTAGE BETWEEN GRID AND CATHODE TERMINALS OF THE SOCKET WITH THE TUBE REMOVED SHOULD HAVE THE FOLLOWING CHARACTERISTICS:

A. VOLTAGE	175-250 VOLTS
B. DURATION	2 MICROSECONDS (AT 70% POINTS)
C. SOURCE IMPEDANCE	1500 OHMS (MAX.)
D. RATE OF RISE	200 VOLTS/MICROSECOND (MIN.)

THE LIMITS OF ANODE TIME DELAY AND ANODE TIME JITTER ARE BASED ON THE MINIMUM TRIGGER. USING THE HIGHEST PERMISSIBLE TRIGGER VOLTAGE AND LOWEST TRIGGER SOURCE IMPEDANCE MATERIALLY REDUCES THESE VALUES BELOW THE LIMITS SPECIFIED.

NOTE 5:

THE TIME OF ANODE DELAY IS MEASURED BETWEEN THE 26 PERCENT POINT ON THE RISING PORTION OF THE UNLOADED GRID VOLTAGE PULSE AND THE POINT AT WHICH EVIDENCE OF ANODE CONDUCTION FIRST APPEARS ON THE LOADED GRID PULSE.

NOTE 6:

TIME JITTER IS MEASURED AT THE 50 PERCENT POINT ON THE ANODE CURRENT PULSE.

ADDITIONAL INFORMATION FOR SPECIFIC APPLICATIONS CAN BE OBTAINED FROM THE:

ELECTRON TUBE APPLICATIONS SECTION
ITT COMPONENTS DIVISION
POST OFFICE BOX 412
CLIFTON, NEW JERSEY



