



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

KUTHE
5C22
HYDROGEN
THYRATRON

DESCRIPTION:

THE 5C22 IS A UNIPOTENTIAL CATHODE, THREE ELEMENT HYDROGEN FILLED THYRATRON DESIGNED FOR NETWORK DISCHARGE SERVICE. IN SUCH SERVICE, IT IS SUITABLE FOR PRODUCING PULSE OUTPUTS OF MORE THAN 2 MEGAWATTS AT AN AVERAGE POWER LEVEL OF MORE THAN 1.6 KW.

THE SPECIAL FEATURES OF THE 5C22 ARE HIGH PEAK VOLTAGE AND CURRENT RATINGS AND THE COMPACT SIZE, LOW TIME JITTER AND THE PRESENCE OF A RESERVOIR, CAPABLE OF MAINTAINING THE HYDROGEN PRESSURE THROUGHOUT THE USEFUL LIFE OF THE TUBE; AN IMPROVED AND STRONGER ENVELOPE TOP SEAL IS INCORPORATED.

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)		9.6	11.6	AMPERES
MINIMUM HEATING TIME				5 MINUTES

MECHANICAL DATA, GENERAL:

MOUNTING POSITION	ANY
BASE	SUPER JUMBO 4-PIN WITH BAYONET A4-18 WITH CERAMIC INSERT C1-43, MEDIUM, WITH CORONA SHIELD
ANODE CAP	
COOLING (NOTE 1)	
NET WEIGHT	12 OUNCES
DIMENSIONS	SEE OUTLINE

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RATINGS:

MAX. PEAK ANODE VOLTAGE, FORWARD	16.0	KILOVOLTS
MAX. PEAK ANODE VOLTAGE, INVERSE (NOTE 2)	16.0	KILOVOLTS
MIN. ANODE SUPPLY VOLTAGE	4.5	KILOVOLTS D.C.
MAX. PEAK ANODE CURRENT	325	AMPERES
MAX. AVERAGE ANODE CURRENT	200	MILLIAMPERES
MAX. RMS ANODE CURRENT (NOTE 3)	6.3	AMPERES A.C.
MAX. EPY X IB X PRR	3.2×10^9	
MAX. ANODE CURRENT RATE OF RISE	1500	AMPERES/USECOND
PEAK TRIGGER VOLTAGE (NOTE 4)		
MAX. PEAK INVERSE TRIGGER VOLTAGE	200	VOLTS

	INITIAL LIMIT	END OF LIFE LIMIT	
MAX. ANODE DELAY TIME (NOTE 5)	0.65	0.70	MICROSECOND
MAX. ANODE DELAY TIME DRIFT	0.10	0.10	MICROSECOND
MAX. TIME JITTER (NOTE 6)	0.005	0.01	MICROSECOND
AMBIENT TEMPERATURE		-500 to 900	CENT.
SHOCK RATING		13 ⁰	NAVY (FLYWEIGHT) SHOCK MACHINE

TWO TYPICAL OPERATIONS AS PULSE MODULATOR, DC RESONANT CHARGING:

PEAK NETWORK VOLTAGE	16.0	12.0	KILOVOLTS
PULSE REPETITION RATE	1000	500	PULSES/SECOND
PULSE LENGTH	1.0	1.5	MICROSECONDS
PULSE FORMING NETWORK IMPEDANCE	47.6	25	OHMS
TRIGGER VOLTAGE	200	200	VOLTS
PEAK POWER OUTPUT (RESISTIVE LOAD 92% ZN)	1.31	1.40	MEGAWATT
PEAK ANODE CURRENT	175	250	AMPERES
AVERAGE ANODE CURRENT	0.18	0.19	AMPERES D.C.

NOTE 1:

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

NOTE 2:

DURING THE FIRST 25 MICROSECONDS AFTER CONDUCTION, THE PEAK INVERSE ANODE VOLTAGE SHALL NOT EXCEED 5 KV.

NOTE 3:

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

NOTE 4:

THE PULSE PRODUCED BY THE DRIVER CIRCUIT SHALL HAVE THE FOLLOWING CHARACTERISTICS WHEN VIEWED AT THE 5C22 SOCKET WITH THE TUBE DISCONNECTED:

A. AMPLITUDE	200-300 VOLTS
B. DURATION	2 MICROSECONDS (AT 70% POINTS)
C. RATE OF RISE	200 VOLTS/MICROSECOND (MIN.)
D. IMPEDANCE	50-500 OHMS

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



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INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION, CLIFTON, NEW JERSEY

