T E N T A T I V E

CERAMIC HYDROGEN THYRATRON

DESCRIPTION:

THE 7390 IS A 33 MEGAWATT, LARGE CERAMIC HYDROGEN THYRATRON. THE EXTERNAL ANODE DESIGN PERMITS OPERATION AT HIGH POWER LEVELS. THE SPECIAL FEATURES OF THE 7390 INCLUDE A HYDROGEN RESERVOIR TO MAINTAIN OPTIMUM PRESSURE AND TO INSURE LONG LIFE.

ELECTRICAL DATA, GENERAL:

	Nom.	Min.	Max.		
Heater Voltage	6.3	5.9	6.7		Volts AC
Heater Current (at 6.3 volts)		22.0	35.0		Amperes
Heater (Note 1)					
Reservoir Coltage (Note 2)		3.5	5.5		Volts
Reservoir Current at 4.5 Volts		8.0	10.0		Amperes
Minimum Heating Time				15	Minutes

MECHANICAL DATA, GENERAL:

Mounting Position	Vertical only, base down	
Base (Per outline)		
Cooling (Note 3)		
Net Weight	11.5	Pounds
Dimensions (See outline drawing)		

RATINGS:

Max. Peak Anode Voltage, Forward	33.0	Kilovolts
Max. Peak Anode Voltage, Inverse (Note 4)	33.0	Kilovolts
Min. Anode Supply Voltage	3.5	Kilovolts DC
Max. Peak Anode Current	2000	Amperes
Max. Average Anode Current	4.0	Amperes
Max. RMS Anode Current (Note 5)	72	Amperes AC
Max. EPY x 1B x PRR	30 x 109	
Max. Anode Current Rate of Rise	10000	Amps./u sec.
Peak Trigger Voltage (Note 6)		
Max. Peak Inverse Trigger Voltage	650	Volts
Max. Anode Delay Time (Note 7)	1.0	Microsecond
Max. Anode Delay Time Drift	0.25	Microsecond
Max. Time Jitter (Note 8)	0.01	Microsecond
Ambient Temperature	-55° to + 75°	C

Note 1:

Cathode connected to center of cathode heater.

Note 2:

Reservoir voltage is marked on the base of each 7390. This is the correct voltage for one typical operating condition, but is not the optimum value for all types of operation. This value may be used initially in new applications and the optimum value may then be obtained by exploring the range of voltage on either side of that marked on the tube. Excess reservoir voltage will result in a failure of the thyratron to deionize between pulses (continuous conduction). Insufficient reservoir voltage will result in excess anode dissipation (270°C.) as indicated by heating of the anode. The optimum reservoir voltage is the midpoint between these two extremes. In certain applications, it may be necessary to provide a regulated source to assure operation within the permissible range of reservoir voltages.

Note 3:

Cooling of the anode is permissible.

Note 4:

During the first 25 microseconds after conduction, the peak inverse anode voltage shall not exceed 5 KV.

Note 5:

The root mean square anode current shall be computed as the square root of the product of peak current and the average current.

Note 6:

The pulse produced by the driver circuit shall have the following characteristics when viewed at the 7390 socket with the tube removed.

A.	Amplitude	1300 - 2500 Volts
B.	Duration	2 microseconds (at 70% points)
C.	Time of Rise	0.35 microseconds (min.)
D.	Impedance	10 - 25 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 7:

THE TIME OF ANODE DELAY IS MEASURED BETWEEN THE 26 PERCENT POINT ON THE RISING PORTION OF THE UNLEADED GRID VOLTAGE PULSE, AND THE POINT AT WHICH ANODE CONDUCTION FIRST EVIDENCES ITSELF ON THE LOADED GRID PULSE.

NOTE 8:

TIME JITTER IS MEASURED AT THE 50% 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

OUTLINE
7390