



ELECTRONIC
INNOVATIONS
IN ACTION

TUBES

OBJECTIVE TECHNICAL INFORMATION

These ratings represent the design objective for this product. Refer to the Preliminary Technical Information sheet for ratings currently achieved in the progression towards design objectives. If PTI sheets do not exist, consult your local Tube Department Regional Sales Office.

DEVELOPMENTAL TYPE

ZR-7520
OTI-210A
Page 1
12-68

This technical information is proprietary and is furnished only as a service to customers.

ZR-7520 TRIGGERED VACUUM GAP

20 Kilovolts
100,000 Amperes

Fires at 500 Volts
Ceramic Envelope

The ZR-7520 is a cold-cathode, vacuum, triggered-spark gap capable of switching 5 coulombs at high voltage. Unique design combines the desirable features of vacuum and gas devices. These include extremely wide voltage range, ease of triggering, high-voltage capability, rapid recovery time, stability of characteristics, and reliability.

Although capable of withstanding a hold-off voltage of 25 kilovolts indefinitely, the ZR-7520 will fire reliably at voltages as low as 500 volts. It will reliably switch non-repetitive high-current pulses with minimum delay and jitter in high-voltage circuits. Applications include "crowbars"* and switching stored electrical energy systems into low-impedance loads, or energy-storage capacitors into resistive or inductive loads.

MECHANICAL

Mounting Any position
Net Weight 6 lbs. Approx.

MAXIMUM RATINGS

Interelectrode Leakage Resistance	10,000	Megohms
Main Gap		
Operating Voltage	500V to 20	Kilovolts
Hold-off Voltage, Indefinite Time, minimum	25	Kilovolts
Peak Current		
Unidirectional Pulse, maximum	100,000	Amperes
Charge Conducted Through Gap per Operation**, maximum	5	Coulombs
Discharge Rate, maximum	2	Per Minute
Delay Time†, V app. = 5KV, maximum	0.5	Microseconds
Interelectrode Leakage Resistance	10,000	Megohms
Trigger Gap		
Typical Trigger Firing Circuit:		
Peak Voltage‡, minimum	5	Kilovolts
Short-Circuit Current, minimum	350	Amperes
Pulse Width, open circuit	3	Microseconds

*In a "crowbar" application, the gap acts as a short-circuiting switch to protect vulnerable high-voltage equipment by diverting the direct-current supply voltage within tenths of a microsecond after initiation of the trigger-pulse. Unless the fault is self-clearing, the circuit must subsequently be opened in the usual manner.

**This rating refers to the charge originating from the capacitor bank including the total charge transfer during ringing. For further information concerning "follow-through" current from the power supply in a given application, consult the General Electric Microwave Tube Business Section.

†From trigger-gap breakdown to main-gap breakdown.

‡The voltage rise time should be as fast as is consistent with the firing speed and accuracy required. The trigger will fire typically at 1 to 3 kilovolts on the leading edge of the pulse but may fire at lower trigger voltages. Only pulse voltage shall be applied to the trigger.

OPERATING NOTES

When discharging or crowbaring energy-storage capacitors, repetitive firing for short periods may be necessary to maintain sufficiently low voltage to protect electrical equipment until the circuit is cleared. Restoration of power-supply voltage to maintain service continuity without circuit-breaker action after a self-clearing fault is feasible in a typical circuit by blocking the trigger pulse. This is due to the rapid deionization time and excellent voltage recovery capability of the ZR-7520. For further information consult the Microwave Tube Business Section, Bldg. 269, Schenectady, New York, FRanklin 4-2211, Extension 5-2507.

