engineering data for CBS®

BULLETIN
E-337A-1

KRYTRON TRIGGER TUBES

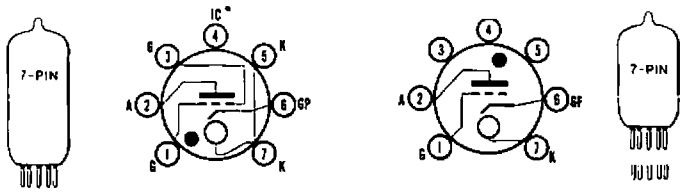
7229 7439 7600
7230 7599 7602

ENGINEERING
DESIGN DATA

7229 7230
7439 7599
7600 7602

NOVEMBER 16, 1959

Cold cathode trigger tubes



7229 7600 **7230 7439 7599 7602**

Miniature "Krytron" gaseous trigger tubes

ELECTRICAL DATA

HEATER CHARACTERISTICS

Heater voltages . . . None required

MAXIMUM RATINGS (Absolute maximum values)

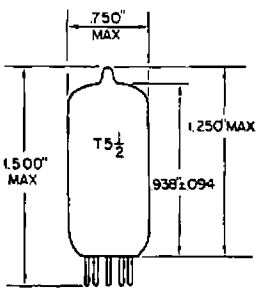
	7599 7600 7602	
Anode operating voltage	300 to 1500	volts
Anode hold-off voltage *	6	Kv
Anode current, peak	500	amp
Anode input	2	watts
Glow current	30 to 150	μamp
Grid firing voltage	120 to 250	volts
Grid firing pulse duration	2 to dc	μsec
Grid firing current	7	μamp
Grid resistor to ground	2.0	meg
Anode delay time		
Temperature normal	1.5	μsec
Temperature extremes	1.5	μsec
Anode delay time variations	0.2	
Temperature normal	0.2	μsec
Temperature extremes	0.2	μsec

MAXIMUM RATINGS (Absolute maximum ratings)

	7229 7439		7230	
Anode operating voltage	1000		1000	volts
Hold-off voltage *	2000		3000	volts
Cathode current peak	500		500	amp
Glow current	100		100	μA
Grid resistor	2.0		2.0	meg
Discharge capacitor	0.5		0.5	μf
Power input	1.0		1.0	watt
Grid bias	±80		±80	volts
Grid pulse current	40		10	μa
Output pulse duration	10		10	μs
Ambient temperature range		−55 to +85		C
Anode delay time	4.0		2.0	μs
Anode delay time variation	0.4		0.2	μs
Pulse repetition rate	20†		20†	ppm
Potting temperature (not to exceed 2 hours)	—		125	C

MECHANICAL DATA

Cathode, cold
Bulb . . . T-5½
Base, miniature button 7-pin . . . (E7-1)
Mounting position . . . Any



PIN CONNECTIONS

Pin 1	Grid
Pin 2	Anode
Pin 3	Grid
Pin 4	I.C.*
Pin 5	Cathode
Pin 6	Glow pin
Pin 7	Cathode

*Do not use

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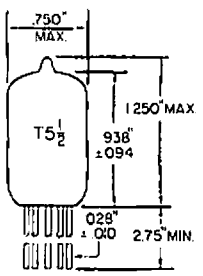
MECHANICAL DATA

Cathode, cold	
Bulb	T-5½
Base, miniature button with 7 flexible leads	
Mounting position	Any



LEAD CONNECTIONS

Lead 1	Grid
Lead 2	Anode
Lead 3	Omitted
Lead 4	Omitted
Lead 5	Omitted
Lead 6	Glow pin
Lead 7	Cathode

APPLICATION

"Krytons" are cold-cathode miniature trigger and timer tubes used in applications where high hold-off voltage, short anode delay times, minimum anode delay variation and high pulse currents are required. Because of their special construction they will withstand wide ambient temperature range, high impact shocks, and severe vibrational stresses. They will operate in sealed enclosures and after storage periods without requiring incident light or other extraneous energies to initiate the glow discharge.

ENVIRONMENTAL TESTS FOR TYPES

7230 **7602**

OPERATION TESTS (Performed under special conditions)
D-c trigger current d-c trigger voltage, pulse trigger voltage
Anode delay time, anode delay time variation
Keep-alive starting characteristics

CONDITIONS FOR TESTS
Oven temperature range of −55°C to +85°C
Temperature cycles under MIL-E-1D 4.9.10
After impact shock of 100g
After vibration test of 10-500 cps up to 10g for 4.5 hours in 3 planes

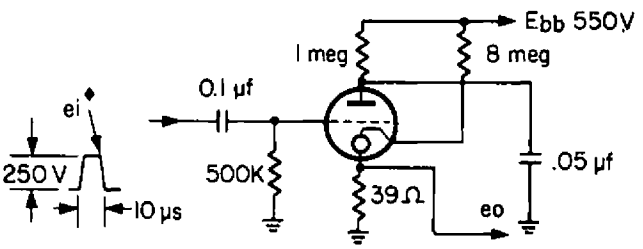
TYPICAL OPERATION FOR CIRCUIT SHOWN All Types

Anode operating voltage	550 volts
Grid voltage	0 volts
Glow current	50 µa

MINIMUM CONDITIONS

Anode operating voltage, d-c	400 volts
Cathode current peak	10 amp.
Glow current	30 µA
Grid resistor	250,000 ohms
Grid pulse duration	10 µsec
Grid pulse amplitude	230 volts

†Pulse repetition rate is governed by the relationship $W = \frac{1}{2} CV^2 f$, where C = discharge capacitor; V = Anode potential in kilovolts; W = power input, and f = repetition frequency.



♦ May be triggered manually by applying d-c momentarily to grid.

* Hold-off voltage given is the highest voltage to which the tube may be safely subjected under any condition. Provision should be made that the circuitry, tube base and socket will withstand this voltage. This may be accomplished by wider spacing, insulation coating, pressurizing, reduction of moisture, etc.