

"KRYTRON" TRIGGER TUBES

RELIABLE 7230 • 7441
COMMERCIAL 7229 • 7439 • 7440

ENGINEERING DESIGN DATA

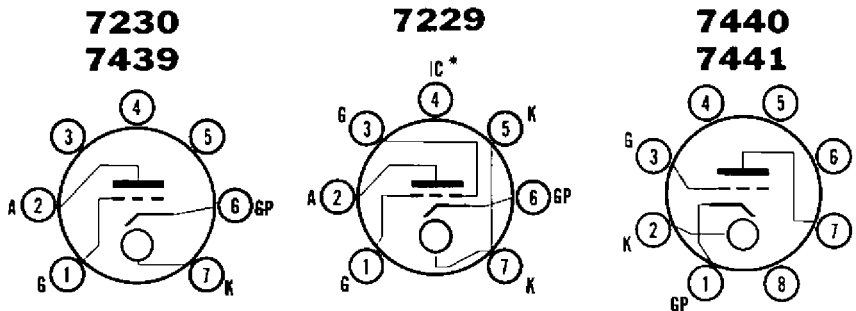
KRYTRONS

MARCH 1, 1959

**Cold-cathode
trigger tubes**

7229

BASING DIAGRAMS



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

7230 7439

ELECTRICAL DATA

HEATER CHARACTERISTICS

Heater voltages None required

MAXIMUM RATINGS (Absolute Maximum values)

	7229 7439	7230	7440	7441	
Anode operating voltage	1000	1000	700	1000	volts
Hold-off voltage	2000	3000	1500	1500	volts
Cathode current peak	500	500	—	—	amp
Glow current	100	100	100	100	µA
Grid resistor	2.0	2.0	2.0	2.0	meg
Discharge capacitor	0.5	0.5	0.2	0.2	µf
Power input	1.0	1.0	0.1	0.1	watt
Grid bias	±80	±80	±45	±45	volts
Grid pulse current	40	10	20	20	µa
Output pulse duration	10	10	10	10	µs
Ambient temperature range			-55 to +85		°C
Anode delay time	4.0	2.0	4.0	1.60	µs
Anode delay time variation	0.4	0.2	0.4	0.4	µs
Pulse repetition rate	20†	20†	†	†	ppm
Potting temperature (not to exceed 2 hours)	—	125	—	—	°C

ENVIRONMENTAL TESTS FOR TYPES 7230 & 7441

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 characteristic.

Conditions for tests

Oven temperature range of -55°C to +85°C
Temperature cycles under MIL-E-1D 4.9.10
7441: After impact shock of 2000g
7230: After impact shock of 100g
After vibration test of 10-500 cps up to 10g for 4.5 hours in 3 planes.

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

7440 7441

MECHANICAL DATA

Cathode, cold
Bulb T-3
Base, subminiature button 8 flexible leads
Mounting position Any

LEAD CONNECTIONS

Lead 1 Glow pin†
Lead 2 Cathode
Lead 3 Grid
Lead 4 Omitted
Lead 5 Omitted
Lead 6 Omitted
Lead 7 Anode
Lead 8 Omitted
†Glow pin marked by red dot.

CBS-HYTRON, Danvers, Massachusetts
A Division of Columbia Broadcasting System, Inc.

APPLICATION

"Krytrons" 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.

TYPICAL OPERATION FOR CIRCUIT SHOWN (All Types)

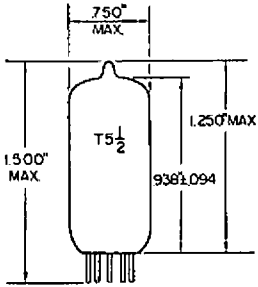
Anode operating voltage	550 volts
Grid voltage	0 volts
Glow current	50 μ a

MINIMUM CONDITIONS

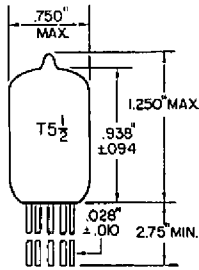
Anode operating voltage, d-c	400 volts
Cathode current peak	10 amp
Glow current	30 μ A
Grid resistor	250,000 ohms
Grid pulse duration	10 μ sec
Grid pulse amplitude	230 volts

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

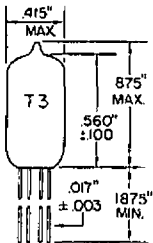
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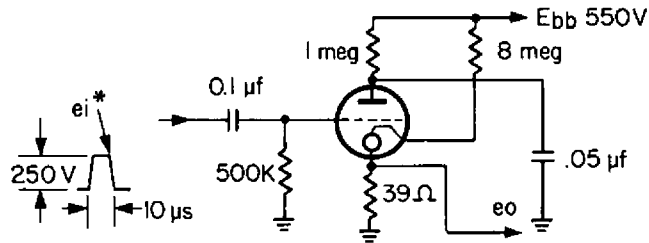
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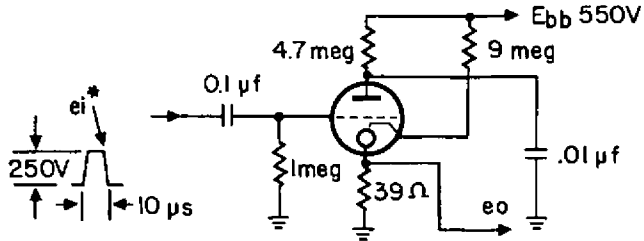


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* May be triggered manually by applying d-c momentarily to grid.

7440 7441



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

*Reliable tubes through
Advanced-Engineering*