COLD CATHODE TRIGGER TUBE

Z804U

Cold cathode trigger tube suitable for direct operation from 200 to 250Vr.m.s. a.c. supplies at mains frequencies. The tube is ignited by a negative trigger potential.

PRELIMINARY DATA

CATHODE cold

CHARACTERISTICS

*Trigger ignition voltage range, all tubes (V_a = 210 to 350V)	−115 to −131	V
*Anode maintaining voltage range, all tubes (I_a = 20mA)	106 to 115	V
Typical transfer current (V_a = 210V)	10	μA

*These limits apply over life

STABILITY

Maximum variation of trigger ignition voltage over life	±5·0	V
Maximum variation of anode maintaining voltage over life	±3·0	V

LIMITING VALUES (absolute ratings)

Maximum positive trigger current	400	μA
Maximum negative trigger current	400	μA
A.C. operation		
R.M.S. mains voltage		
Maximum	275	V
Minimum	180	V
Frequency		
Maximum	100	c/s
Minimum	10	c/s
Mean anode current		
Maximum	25	mA
Minimum	5·0	mA
Maximum averaging time	1	cycle
Peak anode current	125	mA
D.C. operation		
Supply voltage		
Maximum	350	V
Minimum	210	V
Anode current		
Maximum	40	mA
Minimum	5·0	mA

NOTES

The trigger may be operated either from d.c. or low frequency a.c.
Pin 2 should be connected to the cathode via a 2MΩ resistor.

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OPERATING NOTES

This tube is primarily intended for relay operation on 200 – 250V. 50 c/s single phase supplies. The following notes refer to this duty.

The anode circuit

In designing the anode circuit care must be taken to ensure that the cathode current and anode voltage ratings are never exceeded.

The average current through the tube for a given relay RA can be adjusted by the choice of the relay resistance R1, but care must be taken since R1 also determines the peak current passed by the tube. Thus, when a given average current is required, it is possible to exceed the peak current rating particularly if the tube is fired late in the positive half cycle.

The forward and inverse voltages applied to the valve must not exceed the quoted values. Capacitor C connected across the relay provides a smooth relay current, thus avoiding 'chatter'. It should be remembered that the steady voltage across this capacitor adds to the a.c. inverse voltage across the tube but subtracts from the forward voltage.

The trigger circuit

The Z804U is ignited when the trigger voltage is approximately –120V. with respect to cathode. After ignition the trigger potential will rise to approximately +20V and remain there during anode conduction. Thus any capacitor connected between trigger and cathode has to be re-charged through about 140V every time the tube is fired, this compares with about 40V in tubes using conventional positive firing. Thus in direct current triggering any stray trigger – cathode capacitance should be reduced to a minimum.

There is a trigger ignition voltage hysteresis effect in the Z804U in that the trigger ignition voltage immediately following a conduction period is more positive, i.e. numerically smaller, by some 3V than the value after a long standby period.

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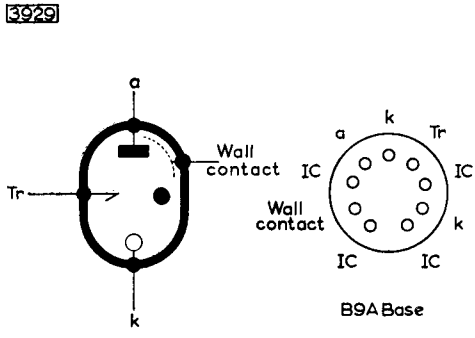

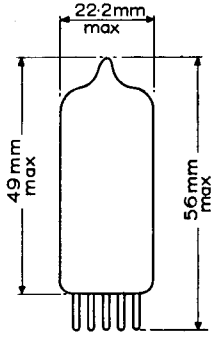

Wall contact (pin 2) must be connected to cathode via a 2MΩ resistor.

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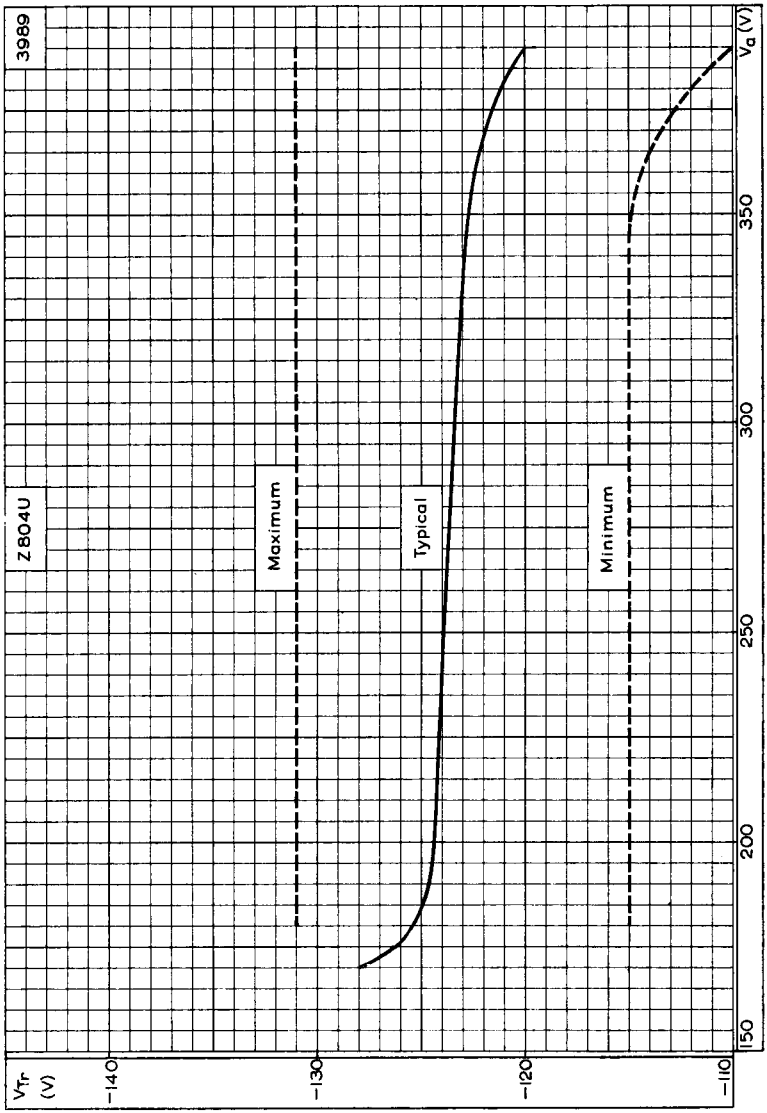

TRIGGER VOLTAGE PLOTTED AGAINST ANODE VOLTAGE FOR ALL TUBES OVER LIFE

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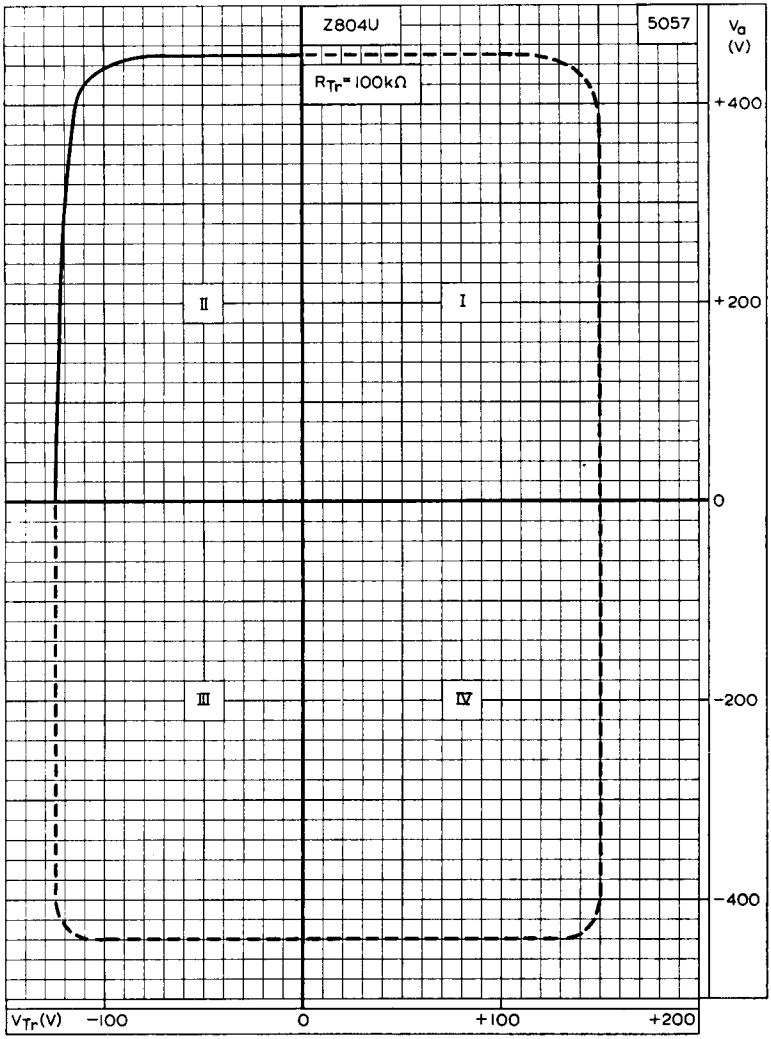

TYPICAL BREAKDOWN CHARACTERISTIC FOR DIFFERENT ELECTRODE POLARITIES

(The tube is recommended for operation in quadrant II only).