

COLD CATHODE TRIGGER TUBE

Z900T

Trigger tube primarily intended for relay applications for operation from d.c. or a.c. supplies.

QUICK REFERENCE DATA (nominal values)

Anode supply voltage		
a.c.(r.m.s.)	117	V
d.c.	175	V
Anode maintaining voltage	62	V
Maximum average cathode current	35	mA
Trigger ignition voltage	80	V
Trigger transfer current	160	μA

CHARACTERISTIC AND RANGE VALUES FOR EQUIPMENT DESIGN

The values given state the range over which the tube will operate both initially and during life. No allowance has been made in the data for supply voltage and component variations. This tube has been designed to be ignited with positive voltages on the anode and trigger but will withstand negative voltages within the limits given.

Anode supply voltage (see note 2 and page C2)

Positive for trigger-controlled ignition		
Maximum	200	V
Minimum	140	V
Negative		
Maximum ($V_{Tr} = 0$ to $-65V$)	200	V

Anode-to-cathode maintaining voltage ($I_a = 50mA$) see note 3

Initial		
Nominal	62	V
Maximum	75	V
End of life (see page C1)		
Maximum	85	V

Trigger-to-cathode ignition voltage ($V_a = 0V$) see note 2

Initial maximum	95	V
End of life maximum (see note 2 and page C1)	105	V
Minimum	73	V

Maximum anode-to-trigger voltage

Anode positive (V_{Tr} from 0 to $-65V$)	200	V
Anode negative (V_{Tr} between 0 and $+73V$)	180	V

Nominal trigger maintaining voltage 60 V

Typical maximum ionisation time (see note 2)

In daylight (approx. ≥ 1 ft. cd.)	20	μs
In darkness	250	μs

Deionisation time (approx.) 500 μs

Transfer requirements

Minimum trigger current for transfer (see page C3)

$V_a = 140V$		
Initial	200	μA
End of life (see page C1)	400	μA
$V_a = 175V$		
End of life	160	μA

Minimum value of capacitor for triggering

$V_a = 175V$	400	pF
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Components for self-extinguishing circuits

Minimum value of anode resistance, $V_{a(b)} = 200V$, $R_{lim} = 1k\Omega$		
$C_a = 0.001\mu F$	1.2	MΩ
$C_a = 0.005\mu F$	450	kΩ
$C_a = 0.01\mu F$	300	kΩ

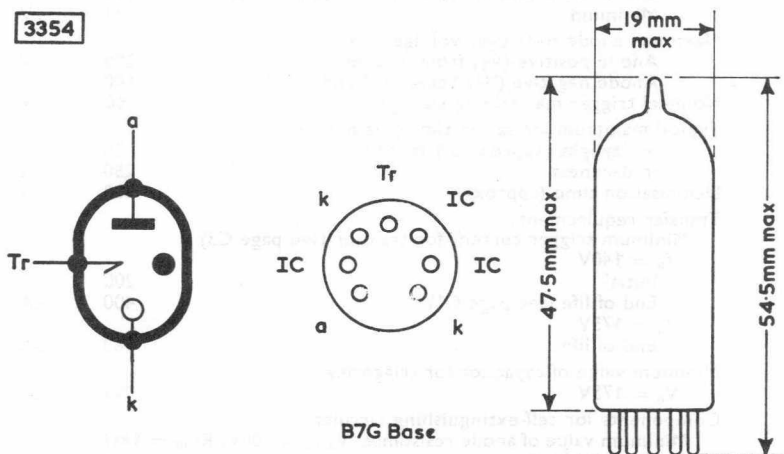
ABSOLUTE MAXIMUM RATINGS

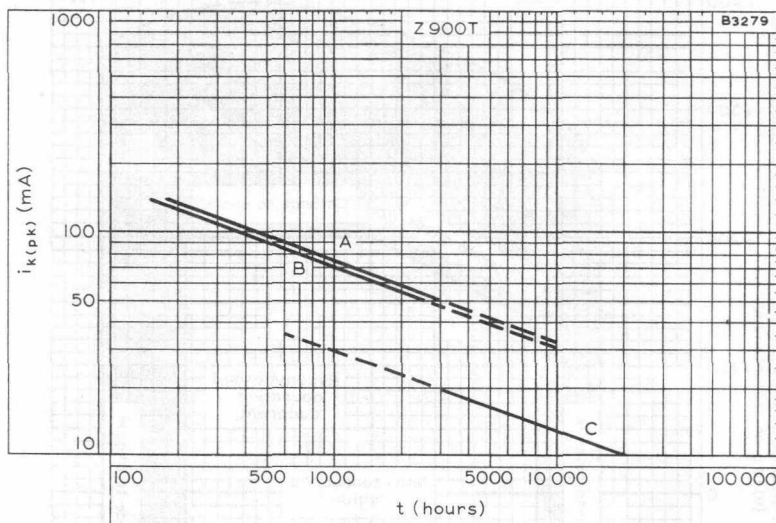
Maximum anode voltage		
Positive	200	V
Negative	200	V
Maximum cathode current (see page C1)		
Average		
Maximum averaging time = 15s	25	mA
Maximum averaging time = 20ms	35	mA
Peak	150	mA
Maximum peak trigger current	100	mA
Maximum anode-to-trigger voltage		
Anode positive (V_{Tr} from 0 to -65V)	200	V
Anode negative (V_{Tr} between 0 and +73V)	180	V

OPERATING NOTES

1. The tube must not be allowed to pass current when the anode is negative.
2. Bright sunlight should be avoided.
With instantaneous anode voltage of 185V, trigger bias voltage of +70V, trigger input pulse of 50V and trigger series resistor of 100k Ω .
3. In this tube, oscillations of up to approximately 14V peak-to-peak are superimposed on the maintaining voltage. Due to this effect the measured value of maintaining voltage will depend on the circuit conditions. These are of no significance in normal applications.

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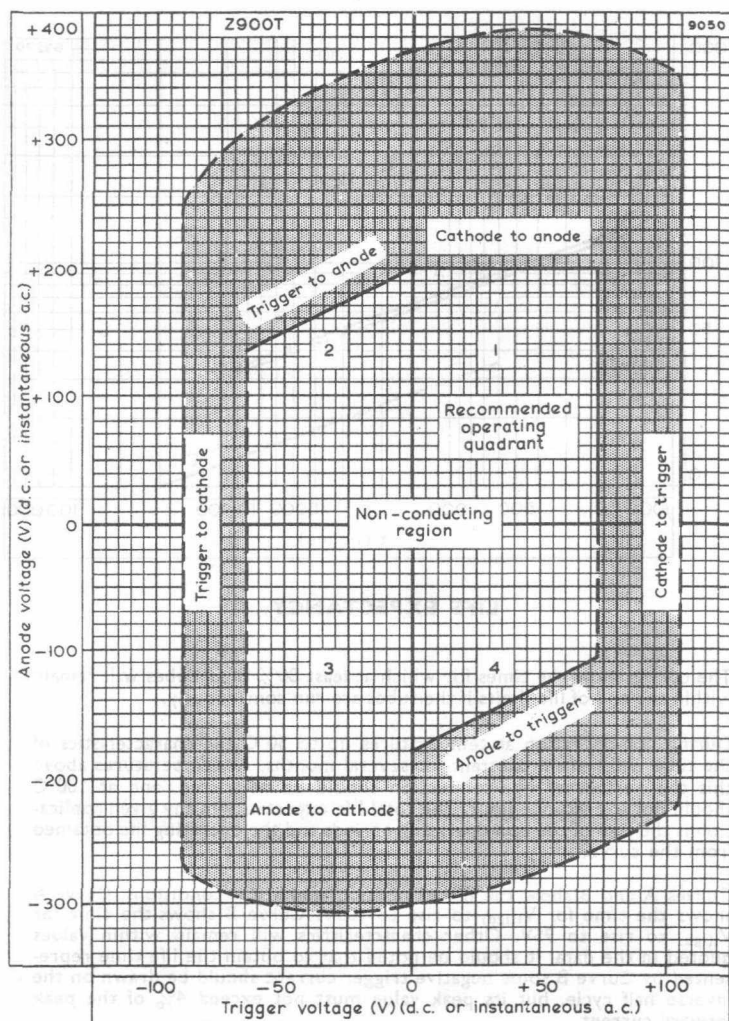
LIFE EXPECTANCY

The curves show the times for which at least 80% of all tubes will remain within the end of life limits if the tubes are run continuously.

During non-operation at temperatures up to 50°C the characteristics of the tube will remain constant for several months. At temperatures above this the periods of non-conduction should be restricted, and at 100°C should not exceed one hour. The total life expectancy in any given application is the sum of the non-operating periods and the operating life obtained from the curves.

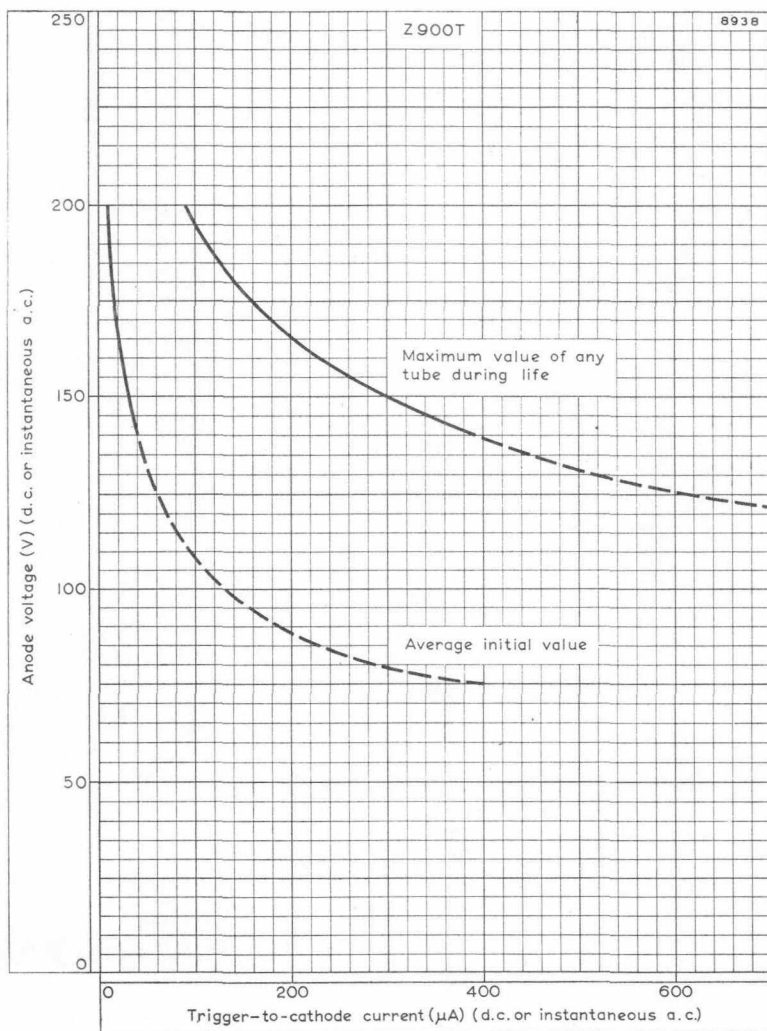
Curves A and B show the life expectancy under a.c. conditions. Curve A shows the time for $V_{t(ign)}$ to rise to 105V. Curve B shows the time for $V_{t(ign)}$ to rise to 95V. Other characteristics will remain within values quoted in the data. It should be noted that to obtain the life time represented by Curve B some negative trigger current should be drawn on the inverse half cycle, but its peak value must not exceed 4% of the peak forward current.

Curve C shows the life time under d.c. conditions to a $V_{t(ign)}$ limit of 105V when the trigger current is either positive or less than 1% of the cathode current.



BREAKDOWN CHARACTERISTICS

Ranges shown between inside and outside curves take into account maximum and minimum, positive and negative values for individual tubes and for changes during tube life. The values shown by dashed sections are approximate.



TRANSFER CHARACTERISTIC

1960

THE JAPANESE TRIGGER

THE JAPANESE TRIGGER



THE JAPANESE TRIGGER

THE JAPANESE TRIGGER



THE JAPANESE TRIGGER