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ELECTRON TUBE DATA SHEET  
WESTERN ELECTRIC 446 A ELECTRON TUBE



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DESCRIPTION

The 446A is a three-electrode inert-gas filled cold cathode tube designed for use as a voltage regulator and has characteristics which are exceptionally stable with life. The third electrode is primarily a starting element.

CHARACTERISTICS

Cathode Current. . . . .	5 to 40 milliamperes
Anode Voltage Drop ( $E_{td}$ ) . . . . .	81 volts
Regulation at 5 to 40 milliamperes d-c (Note 6) . . . . .	±1.5 volts

File: Cold Cathode Section

RATINGS, Absolute System (Note 1)

Cathode Current, Forward		
Maximum . . . . .		40 milliamperes
Minimum . . . . .		5 milliamperes
Starter Current, Forward		
Maximum . . . . .		5 milliamperes
Minimum (Note 2) . . . . .		0.5 milliampere
Maximum Inverse Starter or Anode Current. . . . .		0.0 milliampere
Ambient Temperature Limits . . . . .	-55 to +85	centigrade

ELECTRICAL DATA

	<u>Min.</u>	<u>Bogey</u>	<u>Max.</u>	
Anode Breakdown Voltage. . . . .	-	108	-	volts
Anode Voltage Drop ( $E_{td}$ ) at 40 Milliamperes, (D-C) (Note 3) 80	81.2		82.5	volts
Regulation (5 to 40 Milliamperes, D-C) (Notes 4 & 6) . . . . .	-	+0.1	±1.0	volts
Starter Breakdown Voltage. . . . .	90	95	105	volts
Starter Voltage Drop at 5 Milliamperes, (D-C). . . . .	81	83	86	volts
Transfer Current at 90 volts Anode Voltage. . . . .	-	10	50	microamperes

LIFE DATA

Starter Breakdown Voltage (Max.) after 500 hours at 40 mAdc. . . . .	110	volts
Regulation (5 to 40 mAdc) after 500 hours at 40 mAdc (Note 6). . . . .	1.5	volts max.
Drift in Anode Voltage Drop ( $E_{td}$ ) in 500 hours at 40 mAdc (Note 5) . . . . .	+0.8	Volts max.

MECHANICAL DATA

Mounting Position . . . . .	Any
Net Weight, Approximate . . . . .	0.4 Ounce
Base . . . . .	Small Button 9 pin
Bulb . . . . .	T 6½
Dimensions and connections shown in outline drawing on page 4.	

HANDLING

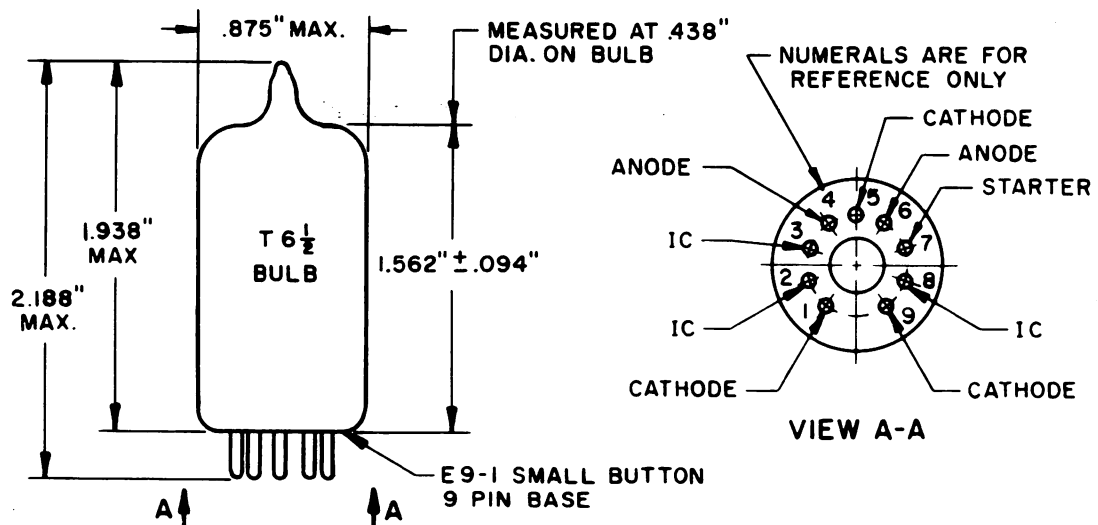
This tube contains a small amount of krypton-85 gas which is a by-product radioactive material. The amount of krypton-85 is less than five microcuries, which is too small an amount to require any special care in use.

Atomic Energy Commission regulations require that the individual tube carton for tubes containing by-product radioactive material be appropriately marked. The marking includes the statement that tube disposal should be in approved manner.

Approved instructions for disposal of tubes containing krypton-85 are as follows:

Tubes to be disposed of should be broken or crushed in a well ventilated place releasing any resulting vapors to the outside atmosphere. The residual broken or crushed tubes should be disposed of in a normal public trash disposal system. Tubes should be disposed of at a rate of not more than 100 each week from any one location. Avoid breathing vapors from broken tubes.

- Note 1: In the "Absolute System" the maximum ratings specified are limiting values above which the serviceability of the device may be impaired from the viewpoint of life and satisfactory performance. Maximum ratings, as such, do not constitute a set of operating conditions and all values may not, therefore, be attained simultaneously.
- Note 2: The minimum starter current requirement applies only when the tube is operated for extended periods (hundreds of hours) between starting operations to assure maintaining starter breakdown and transfer current characteristics.
- Note 3: These values are for new tubes. Anode voltage drop will stabilize within 3 minutes after starting.
- Note 4: Continuous operation at a current value in the low portion of the operating range for an extended period (hundreds of hours) may result temporarily in regulation exceeding the stated values.
- Note 5: The drift of anode voltage drop improves with operating life. After 1000-2000 hours operation the drift of anode voltage drop per 1000 hours will not exceed 0.3 volt.
- Note 6: Regulation is defined to be Anode Voltage Drop ( $E_{td}$ ) at 40 mAdc minus Anode Voltage Drop ( $E_{td}$ ) at 5 mAdc.



NOTE: PINS MARKED IC (INTERNAL CONNECTION) SHOULD NOT BE CONNECTED TO ANY PORTION OF AN EXTERNAL CIRCUIT. FAILURE TO OBSERVE THIS PRECAUTION MAY RESULT IN IMPROPER OPERATION OF THE TUBE.

A development of Bell Telephone Laboratories, the research laboratories of the American Telephone and Telegraph Company and the Western Electric Company.

*Western Electric Company*