



5823

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**GLOW-DISCHARGE TRIODE**

COLD-CATHODE, MINIATURE TYPE

GENERAL DATA**Electrical:**

Cathode . . . . . Cold

Ionization Time (Approx.):

For conditions: Instantaneous anode volts = 185;

peak positive starter-electrode pre-firing

volts = 70; peak positive starter-

electrode triggering volts = 50; anode-

circuit series resistor (ohms) = 820;

starter-electrode series resistor

(ohms) = 100000 . . . . . 20  $\mu$ sec

Deionization Time (Approx.):

For conditions: (Same as for Ionization Time)

500  $\mu$ sec

Anode Voltage Drop. . . . . 62 volts

Starter-Electrode Voltage Drop. . . . . 61 volts

Anode Breakdown Voltage . . . . . 290 volts

Starter-Electrode Breakdown Voltage . . . . . 80 volts

Required Transfer Current (DC or

Instantaneous AC) for transition of

discharge to anode at 140 volts peak

50  $\mu$ amp**Mechanical:**

Mounting Position . . . . . Any

Maximum Overall Length. . . . . 2-1/8"

Maximum Seated Length . . . . . 1-7/8"

Length, Base Seat to Bulb Top (excluding tip) . 1-1/2"  $\pm$  3/32"

Maximum Diameter. . . . . 3/4"

Bulb. . . . . T-5-1/2

Base. . . . . Small-Button Miniature 7-Pin

Basing Designation for BOTTOM VIEW . . . . . 4CK

Pin 1 - Anode

Pin 2 - Internal

Connection-

Do Not Use

Pin 3 - Cathode

Pin 4 - Starter

Electrode

Pin 5 - Internal

Connection-

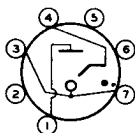
Do Not Use

Pin 6 - Internal

Connection-

Do Not Use

Pin 7 - Cathode

**Maximum Ratings<sup>A</sup>, Absolute Values:***For First-Quadrant Operation Only***PEAK ANODE AND STARTER-ELECTRODE VOLTAGE:**

Inverse . . . . . 200 max. volts

Forward . . . . . 200 max. volts

<sup>A</sup> These ratings apply to the 5823 when it is operated from a power supply having a frequency of 60 cycles per second. If a contemplated application involves higher supply frequencies, please write, stating the proposed operating frequency, to the attention of Commercial Engineering, RCA, Harrison, New Jersey for information as to required changes in maximum ratings and characteristics.

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## CATHODE CURRENT:

|                    |          |    |
|--------------------|----------|----|
| Peak. . . . .      | 100 max. | ma |
| Average* . . . . . | 25 max.  | ma |

## PEAK STARTER-ELECTRODE CURRENT:

|                                                   |          |    |
|---------------------------------------------------|----------|----|
| With starter-electrode voltage positive . . . . . | 100 max. | ma |
|---------------------------------------------------|----------|----|

|                               |            |    |
|-------------------------------|------------|----|
| AMBIENT TEMPERATURE . . . . . | -60 to +75 | °C |
|-------------------------------|------------|----|

## Typical Operating Conditions:

*For Relay Service with 60-Cycle AC Supply*

|                                                                                                                       |     |       |
|-----------------------------------------------------------------------------------------------------------------------|-----|-------|
| AC Anode Supply Voltage (RMS) . . . . .                                                                               | 117 | volts |
| AC Starter-Electrode Voltage:                                                                                         |     |       |
| Max. Peak Positive Pre-Firing Voltage . . . . .                                                                       | 70  | volts |
| Min. Peak Positive Triggering Voltage . . . . .                                                                       | 35  | volts |
| Min. Firing Voltage (Sum of In-Phase Instantaneous Pre-Firing Voltage and Instantaneous Triggering Voltage) . . . . . | 105 | volts |

## CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

*For First-Quadrant Operation Only*

|                                                                                                                     | Note | Min. | Max.             |       |
|---------------------------------------------------------------------------------------------------------------------|------|------|------------------|-------|
| Anode Breakdown Voltage . . . . .                                                                                   | 1    | 200  | -                | volts |
| Starter-Electrode Breakdown Voltage . . . . .                                                                       | 2    | 73   | 105 <sup>□</sup> | volts |
| Required Transfer Current (DC or Instantaneous AC) for transition of discharge to anode at 140 volts peak . . . . . | 3    | -    | 400 <sup>□</sup> | μamp  |
| Anode Voltage Drop . . . . .                                                                                        | 4    | -    | 85 <sup>□</sup>  | volts |
| Starter-Electrode Voltage Drop . . . . .                                                                            | 5    | -    | 75 <sup>□</sup>  | volts |

Note 1: With a variable dc anode voltage, dc starter-electrode voltage of 0 volts, anode-circuit series resistance of 3000 ohms, and starter-electrode series resistance of 50000 ohms.

Note 2: With dc anode voltage of 0 volts, variable dc starter-electrode voltage, anode-circuit series resistance of 3000 ohms, and starter-electrode series resistance of 50000 ohms.

Note 3: With a variable dc starter-electrode voltage, anode-circuit series resistance of 3000 ohms, and starter-electrode series resistance of 2 megohms.

Note 4: With dc anode voltage of 230 volts, dc starter-electrode voltage of 91 volts, dc cathode current of 50 milliamperes, anode-circuit series resistance of 3000 ohms, and starter-electrode series resistance of 50000 ohms.

Note 5: With dc anode voltage of 0 volts, variable dc starter-electrode voltage, dc starter-electrode current of 10 milliamperes, and starter-electrode series resistance of 3000 ohms.

\* Averaged over any interval of 15 seconds maximum.

□ Maximum individual tube values during life.



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## GLOW-DISCHARGE TRIODE

### OPERATING NOTES

RCA-5823 is recommended for operation only in that part of the breakdown characteristic designated by Quadrant I. Operation in Quadrant II is satisfactory but changes in tube ratings are necessary. Operation in Quadrants III and IV is not recommended, because the anode and starter electrode are not designed for efficient cathode operation; their use in this manner will result in unstable operation and shorter tube life. The information given for Quadrants III and IV is of value to the equipment designer in that it indicates the need for precautions to be taken in order that the peak inverse voltage rating is not exceeded.

Because of the asymmetrical shape of its anode characteristic the 5823 can be used as a rectifier. When so used (with starter electrode connected through 50000-ohm resistor to anode), the 5823 has a maximum peak inverse anode voltage rating of 200 volts, a maximum peak cathode current of 100 milliamperes, and a maximum dc cathode current of 25 milliamperes. Operation at values of dc cathode current less than 8 milliamperes is not recommended because of resulting instability.

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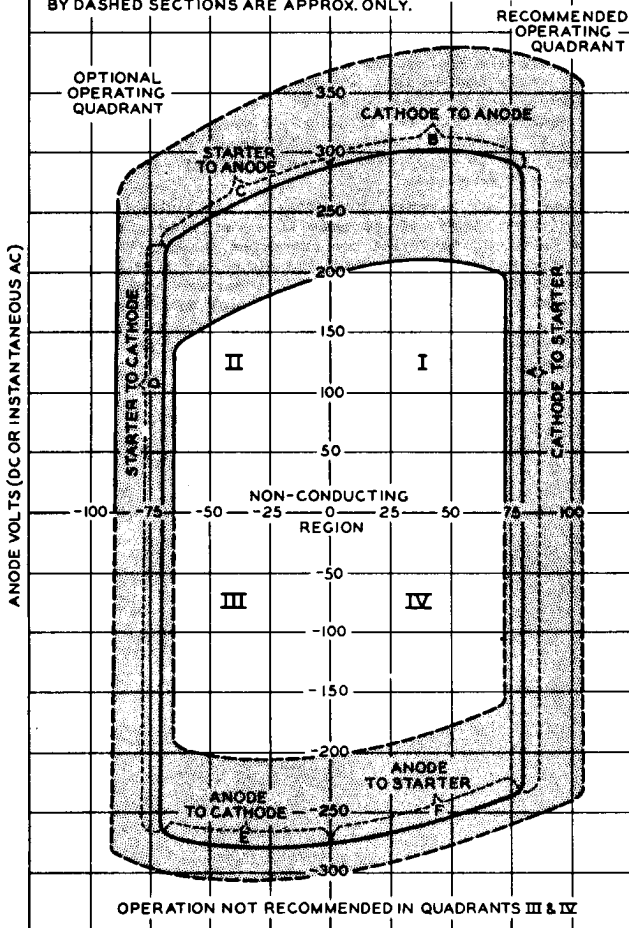


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# BREAKDOWN CHARACTERISTICS FOR ALL QUADRANTS

STARTER-ELECTRODE SERIES RESISTANCE = 200000 OHMS

RANGES SHOWN BETWEEN INSIDE AND OUTSIDE CURVES TAKE INTO ACCOUNT MAX. AND MIN. + AND - VOLTAGE VALUES FOR INDIVIDUAL TUBES AND FOR CHANGES DURING TUBE LIFE. THE VALUES SHOWN BY DASHED SECTIONS ARE APPROX. ONLY.

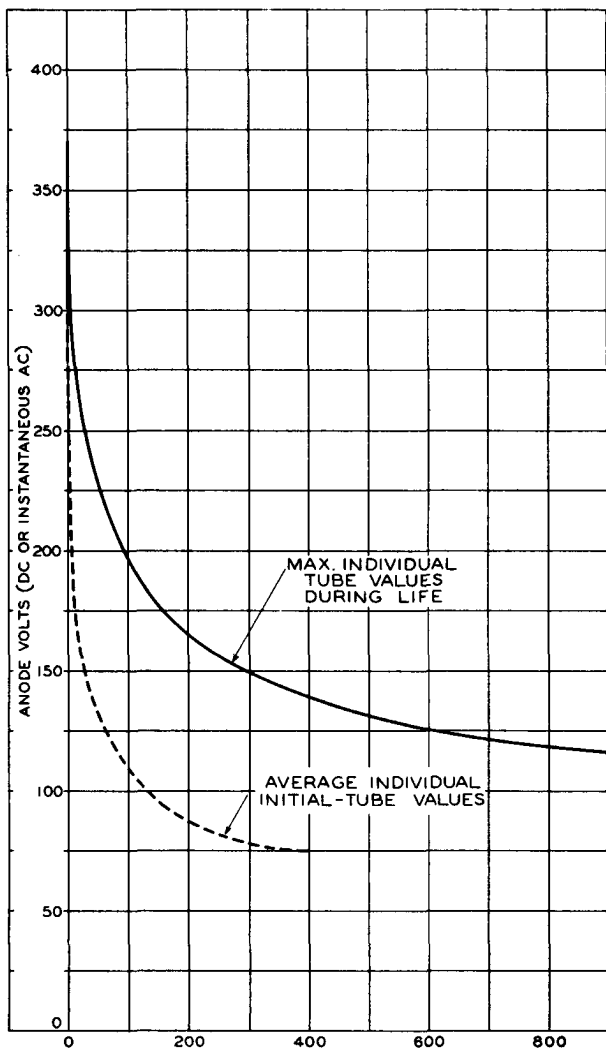




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## TRANSITION CHARACTERISTIC



STARTER-ELECTRODE MICROAMPERES (DC OR INSTANTANEOUS AC)

MAY 16, 1949

TUBE DEPARTMENT

92CM-7282

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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## GLOW-DISCHARGE TRIODE

## AVERAGE ANODE CHARACTERISTIC

