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 μsec

Deionization Time (Approx.):
For conditions: (Same as for Ionization Time) 500 μsec

Anode Voltage Drop: 62 volts
Starter-Électrode Voltage Drop: 61 volts
Anode Breakdown Voltage: 290 volts
Starter-Électrode Breakdown Voltage: 80 volts
Required Transfer Current (DC or Instantaneous AC) for transition of
discharge to anode at 140 volts peak 50 μamp

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" ± 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*, Absolute Values:

For First-Quadrant Operation Only

PEAK ANODE AND STARTER-ELECTRODE VOLTAGE:
Inverse: 200 max. volts
Forward: 200 max. volts

* 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.

SEPT. 15, 1949
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
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 In-
stantaneous Triggering Voltage) .............. 105 volts

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN
For First-Quadrant Operation Only

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<th>Note</th>
<th>Min.</th>
<th>Max.</th>
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<tr>
<td>Anode Breakdown Voltage</td>
<td>1</td>
<td>200</td>
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</table>
| Starter-Electrode Break-
down Voltage | 2 | 73 | 105° volts |
| Required Transfer Cur-
et (DC or Instantan-
eous AC) for transition of discharge to anode | 3 | - | 400° µamp |
| Anode Voltage Drop | 4 | - | 85° volts |
| Starter-Electrode Volt-
age Drop | 5 | - | 75° 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 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.

SEPT. 15, 1949
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
TENTATIVE DATA 1
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.
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.

RECOMMENDED OPERATING QUADRANT

OPTIONAL OPERATING QUADRANT

CATHODE TO ANODE

STARTER TO ANODE

CATHODE TO STARTER

ANOYE VOLTS (DC OR INSTANTANEOUS AC)

NON-CONDUCTING REGION

-100 -75 -50 -25 0 25 50 75 100

III

II

I

IV

ANODE TO STARTER

ANODE TO CATHODE

STARTER TO CATHODE

STARTER TO ANODE

OPERATION NOT RECOMMENDED IN QUADRANTS III & IV

MAY 18, 1949 TUBE DEPARTMENT 92CM-7283
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
AVERAGE ANODE CHARACTERISTIC

TYPE 5823

LOAD

R = 5000 OHMS

ANODE VOLTS (DC OR INSTANTANEOUS AC)

ANODE MA. (DC OR INSTANTANEOUS AC)

92CM-7275T

SEPT. 15, 1949

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY