Photomultiplier Tube

**S-4 RESPONSE**

**FLEXIBLE LEADS**

For AC- or DC-Operated Control Applications
Which Require High Luminous Sensitivity

**SIDE-ON, 9-STAGE TYPE**

**GENERAL**

Spectral Response ........................................... S-4
Wavelength of Maximum Response ....................... 4000 ± 500 angstroms
Cathode, Opaque ............................................. Cs-Sb
  Minimum projected length\(^a\) ...................... 15/16 in
  Minimum projected width\(^b\) ......................... 5/16 in
Window .............................................. Lime Glass, (Corning\(^c\) No.0080), or equivalent
Dynode Material ........................................... Cs-Sb
Direct Interelectrode Capacitances (Approx.)
  Anode-to-dynode No.9 ................................ 3.8 pF
  Anode to all other electrodes ..................... 4.8 pF
Maximum Overall Length ................................ 2-3/4 in
  Excluding semiflexible leads
Maximum Envelope Length ................................ 2-1/4 in
  Excluding tip
Length ............................................. 1-1/4 ± 3/32 in
  From envelope seal to center of useful cathode area
Maximum Diameter ...................................... 1-3/16 in
Operating Position ................................... Any
Weight (Approx.) ......................................... 2 oz
Envelope .............................................. JEDEC T9
Magnetic Shield ........................................ Perfection Mica Co.,\(^c\) No.P-107, or equivalent

**TERMINAL DIAGRAM (Bottom View)**

**ABSOLUTE-MAXIMUM RATINGS**

DC or Peak AC Supply Voltage
  Between anode and cathode ......................... 1250 V
  Between anode and dynode No.9 ...................... 250 V
  Between consecutive dynodes ..................... 250 V
  Between dynode No.1 and cathode ................. 250 V
Average Anode Current\(^d\) ................................. 0.1 mA
Ambient Temperature .................................. 75 °C

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\(^a\) Indicates a change.

RADIO CORPORATION OF AMERICA
Electronic Components and Devices

Harrison, N. J.

DATA 1
12-65
CHARACTERISTICS RANGE VALUES

Under conditions with supply voltage (E) across a voltage di-
vider providing 1/10 of E between cathode and dynode No.1; 1/10
of E for each succeeding dynode stage; and 1/10 of E between
dynode No.9 and anode.

With E = 1000 V dc

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<thead>
<tr>
<th></th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiant, at 4000 angstroms.</td>
<td>-</td>
<td>3.4x10^4</td>
<td>- A/W</td>
</tr>
<tr>
<td>Luminous, at 0 c/s^6</td>
<td>5</td>
<td>35</td>
<td>250</td>
</tr>
<tr>
<td>Dark Current to any Electrode</td>
<td>-</td>
<td>-</td>
<td>7.5x10^-7</td>
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<tr>
<td>At 25°C</td>
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With E = Adjustable 60 c/s ac voltage

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<tbody>
<tr>
<td>Anode-to-Cathode Voltage</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>RMS Values</td>
<td>535</td>
<td>775</td>
<td>1000</td>
</tr>
<tr>
<td>Anode Dark Current</td>
<td></td>
<td>-</td>
<td>2.5x10^-7</td>
</tr>
<tr>
<td>At 25°C</td>
<td></td>
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a On plane perpendicular to the indicated direction of incident light and
  passing through the major axis of the tube.
b Made by Corning Glass Works, Corning, New York.
c Made by Magnetic Shield Division, Perfection Mica Co., 1829 Civic Opera
  Bldg., 20 North Wacker Drive, Chicago 6, Illinois.
d Averaged over any interval of 30 seconds maximum.
e Under the following conditions: The light source is a tungsten-filament
  lamp having a lime-glass envelope. It is operated at a color tempera-
  ture of 2800° K and a light input of 10 microlumens is used.
f Under the following conditions: The light source is a tungsten-filament
  lamp having a lime-glass envelope. It is operated at a color tempera-
  ture of 2800° K and a light input of 1 microlumen is used. Supply Volt-
  age (E) is adjusted to give an anode current of 7.5 microamperes.
g For conditions same as (f) except no radiant flux on photocathode.

Indicates a change.
The angular variation between the plane through Lead No. 1 and tube axis and the plane perpendicular to the plane of the grill will not exceed 20°.

SPECTRAL-SENSITIVITY CHARACTERISTIC of Phototube having S-4 Response is shown at front of this section.
RECOMMENDED VOLTAGE-DIVIDER NETWORK FOR USE WITH TYPE 6472 IN HEADLIGHT-DIMMING SERVICE

AC OR DC POWER SUPPLY (SEE NOTE)

R1 R2 R3 R4 R5
R6 R7 R8 R9 R10: 1 megohm, 1/2 watt
R11: 2 megohms, 1/2 watt
R12: 5.1 megohms, 1/2 watt
R13 R14 R15 R16
R17 R18 R19 R20: 8.2 megohms, 1/2 watt
R21: 820,000 ohms, 1/2 watt

Note: Adjustable between approximately 500 and 1000 volts dc or peak ac.
Typical Anode Characteristics

VOLTS/STAGE=100
LIGHT SOURCE IS A TUNGSTEN-FILAMENT LAMP OPERATED AT A COLOR TEMPERATURE OF 2670° K.
Range of Luminous Sensitivity

DC

PEAK AC

SENSITIVITY — AMPERES/LUMEN (COLOR TEMP 2870°K)

DC OR PEAK SINE-WAVE AC VOLTS PER STAGE

MAXIMUM

TYPICAL

MINIMUM

92CM-8027R2
Variation in Photocathode Sensitivity Along Its Length

Spot size: 1mm dia. approx.
Variations caused by interception of light by grill as well as surface irregularities have been ignored.

Variation in Photocathode Sensitivity Across Its Projected Width in Plane of Grill

Spot size: 1mm dia. approx.
Grill toward observer, base down.
Cathode width projected normal to plane of grill.
Variations caused by interception of light by grill as well as surface irregularities have been ignored.