## Photomultiplier Tube

### 9-STAGE, SIDE-ON TYPE HAVING S-4 RESPONSE

*For DC-Operated Control Applications Such as Automobile-Headlight Control*

### GENERAL

- **Spectral Response**: S-4
- **Wavelength of Maximum Response**: 4000 ± 500 angstroms
- **Cathode, Opaque**: Cs-Sb
  - Minimum projected length: 0.93 in
  - Minimum projected width: 0.31 in
- **Window**: Lime Glass, (Corning® No.0080), or equivalent
- **Dynode Material**: Cs-Sb
- **Direct Interelectrode Capacitances (Approx.)**
  - Anode to dynode No.9: 4.2 pF
  - Anode to all other electrodes: 5.5 pF
- **Maximum Overall Length**: 3.12 in
- **Maximum Seated Length**: 2.69 in
- **Length**: 1.56 ± 0.09 in

### ABSOLUTE-MAXIMUM RATINGS

- **DC Supply Voltage**
  - Between anode and cathode: 1250 V
  - Between dynode No.9 and anode: 250 V
  - Between consecutive dynodes: 250 V
  - Between dynode No.1 and cathode: 250 V
- **Average Anode Current**: 0.1 mA
- **Ambient Temperature**: 75 °C

### TERMINAL DIAGRAM (Bottom View)

- Pin 1 – Dynode No.1
- Pin 2 – Dynode No.2
- Pin 3 – Dynode No.3
- Pin 4 – Dynode No.4
- Pin 5 – Dynode No.5
- Pin 6 – Dynode No.6
- Pin 7 – Dynode No.7
- Pin 8 – Dynode No.8
- Pin 9 – Dynode No.9
- Pin 10 – Anode
- Pin 11 – Photocathode

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*Indicates a change.*

**RCA**

Electronic Components and Devices

Harrison, N. J.

**DATA I**

6–66
CHARACTERISTICS RANGE VALUES

Under conditions with dc supply voltage (E) across a voltage divider 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 (except as noted)

<table>
<thead>
<tr>
<th>Sensitivity</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiant, at 4000 angstroms</td>
<td>-3.4 x 10^4</td>
<td>-34</td>
<td>A/W</td>
</tr>
<tr>
<td>Luminous, at 0 c/s</td>
<td>-34</td>
<td>-34</td>
<td>A/1m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electrode Dark Current (At 25°C)</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>At anode</td>
<td>-</td>
<td>-</td>
<td>1 x 10^-7</td>
</tr>
<tr>
<td>At any other electrode</td>
<td>-</td>
<td>-</td>
<td>7.5 x 10^-7</td>
</tr>
</tbody>
</table>

With E = Adjustable dc voltage

<table>
<thead>
<tr>
<th>Anode-to-Cathode Voltage</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>630</td>
<td>900</td>
<td>1100 V</td>
</tr>
</tbody>
</table>

DC values

a. On plane perpendicular to the indicated direction of incident light and passing through the major axis of the tube.
c. Made by Amphenol Electronics Corporation, 1830 South 54th Avenue, Chicago 54, Illinois.
d. Made by James Millen Manufacturing Company, 150 Exchange Street, Maiden 48, Massachusetts.
e. Averaged over any interval of 30 seconds maximum.
f. Under the following conditions: The light source is a tungsten-filament lamp having a lime-glass envelope. It is operated at a color temperature of 2870° K and a light input of 10 micromalums in used.
g. Under the following conditions: Light incident on the cathode is transmitted through a filter (Corning C.S. No. 5-67, Glass Code No. 3482—Manufactured by the Corning Glass Works, Corning, New York) from a tungsten-filament lamp operated at a color temperature of 2870° K. The value of light flux incident on the filter is 100 micromalums. Supply voltage (E) is adjusted to give an anode current of 50 microamperes.

SPECTRAL-SENSITIVITY CHARACTERISTIC of Phototube having S-4 Response is shown at the front of this Section

and

DIMENSIONAL OUTLINE

and

AVERAGE-ANODE-CHARACTERISTICS and VARIATION-IN-SENSITIVITY-OF-PHOTOCATHODE

Curves shown under Type 6328 also apply to the 7117

→ Indicates a change.
RECOMMENDED VOLTAGE-DIVIDER NETWORK FOR USE
WITH TYPE 7117 IN HEADLIGHT-CONTROL SERVICE

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

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Sensitivity Characteristics

SUPPLY VOLTAGE (E) ACROSS VOLTAGE DIVIDER 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.

Sensitivity = Amperes/Lumen (Color Temperature 2850°K)

ANODE-TO-CATHODE SUPPLY VOLTS (E)

DATA 2

RADIO CORPORATION OF AMERICA
Electronic Components and Devices
Harrison, N. J.