



## PHOTOTUBE

### DESCRIPTION

The GL-931-A is an eleven-electrode vacuum phototube unique in that the photo-current produced at the cathode is multiplied many times by secondary emission occurring at successive dynodes within the tube. This tube can multiply feeble currents produced

by weak illuminations as much as 200,000 times. This feature combined with its high sensitivity, low-noise level, low-dark current, and freedom from distortion renders the GL-931-A very useful for relays and in applications involving low-light levels.

### TECHNICAL INFORMATION

*These data are for reference only. For design information refer to specifications.*

### GENERAL CHARACTERISTICS

Number of electrodes ..... 11

#### Electrical

Spectral response ..... S-4

Interelectrode capacitances

Anode to dynode No. 9 ..... 3.5 micromicrofarads

Anode to all other electrodes ..... 6.5 micromicrofarads

Wavelength of maximum response ..... 3750 angstroms

  
*Electronic*  
TUBE

**GENERAL  ELECTRIC**

TECHNICAL INFORMATION (CONT'D)

Mechanical

|                                                |                                   |                              |
|------------------------------------------------|-----------------------------------|------------------------------|
| Cathode window area                            | 0.25                              | square inch                  |
| Seated height to center of useful cathode area | $1\frac{11}{16} \pm \frac{3}{32}$ | inches                       |
| Maximum over-all height                        | $3\frac{11}{16}$                  | inches                       |
| Maximum seated height                          | $3\frac{1}{8}$                    | inches                       |
| Maximum diameter                               | $1\frac{5}{16}$                   | inches                       |
| Base                                           |                                   | small-shell submagnal 11-pin |
| Mounting position                              | any                               |                              |
| Net weight, approx.                            | 1                                 | ounce                        |
| Shipping weight, approx.                       | 3                                 | pounds                       |

MAXIMUM RATINGS

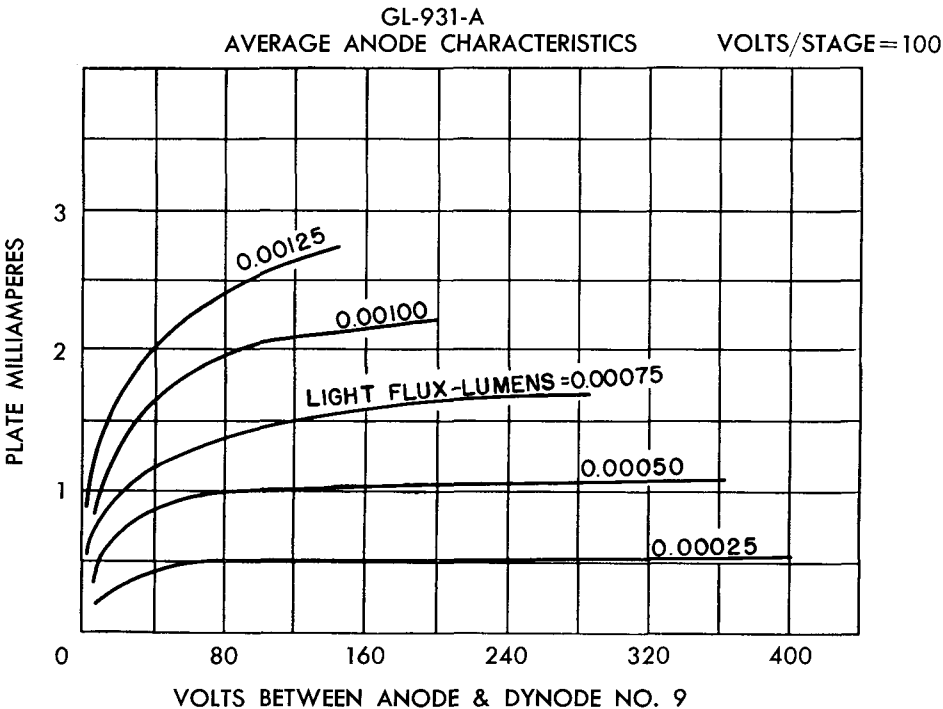
|                                        |      |                              |
|----------------------------------------|------|------------------------------|
| Anode voltage, d-c or peak a-c*        | 1250 | volts                        |
| Cathode current density                | 230  | milliamperes per square inch |
| Ambient temperature                    | 50   | centigrade                   |
| Voltage between Dynode No. 9 and Anode | 250  | volts                        |
| Anode current                          | 2.5  | milliamperes                 |
| Anode dissipation                      | 0.5  | watt                         |

TYPICAL OPERATION

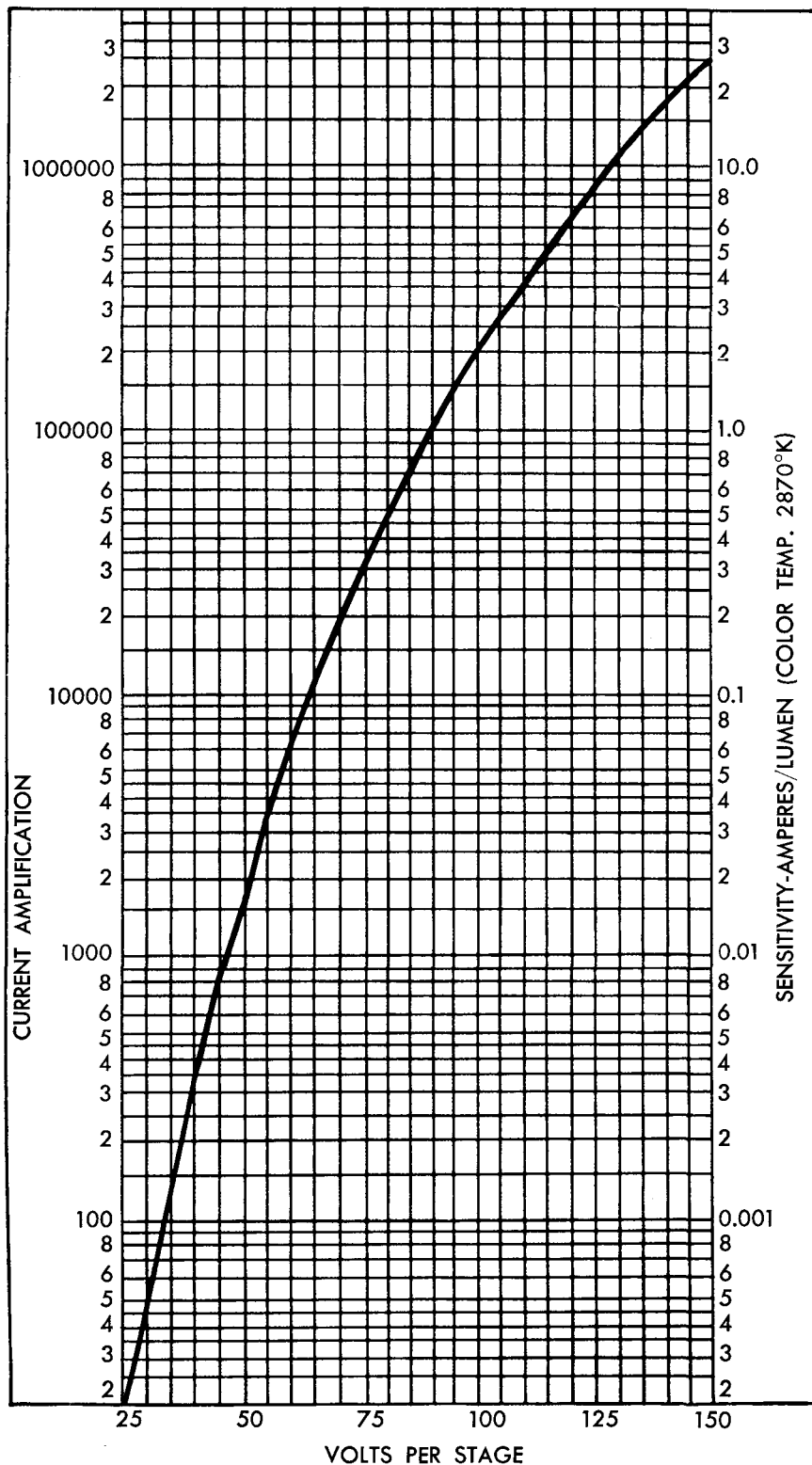
|                               |        |         |                             |
|-------------------------------|--------|---------|-----------------------------|
| Voltage per stage             | 75     | 100     | volts                       |
| Luminous sensitivity†         | 0.3    | 2.0     | amperes per lumen           |
| Current amplifications†       | 30,000 | 200,000 |                             |
| Sensitivity at 3750 angstroms | 270    | 1800    | microamperes per microwatts |

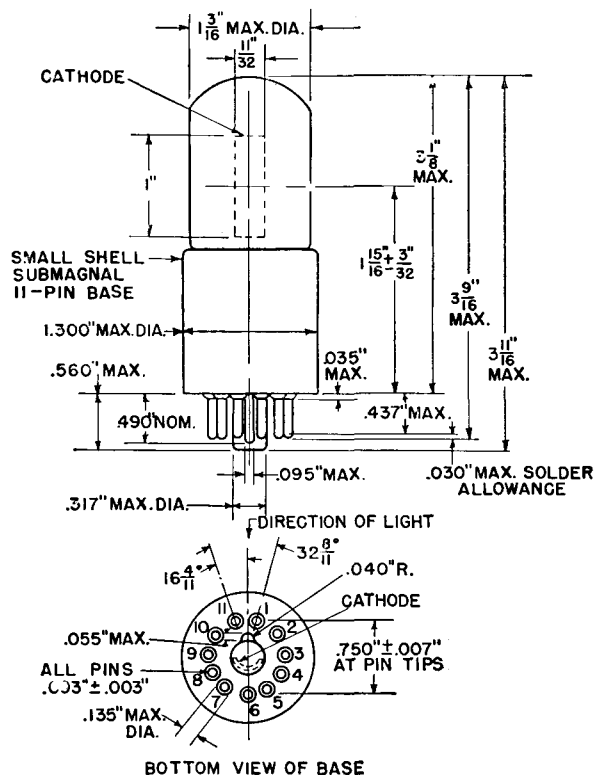
\* Referred to cathode.

† On basis of lighted cathode area approximately 3 mm in diameter.



GL-931-A  
AVERAGE CHARACTERISTICS  
D-C OPERATION





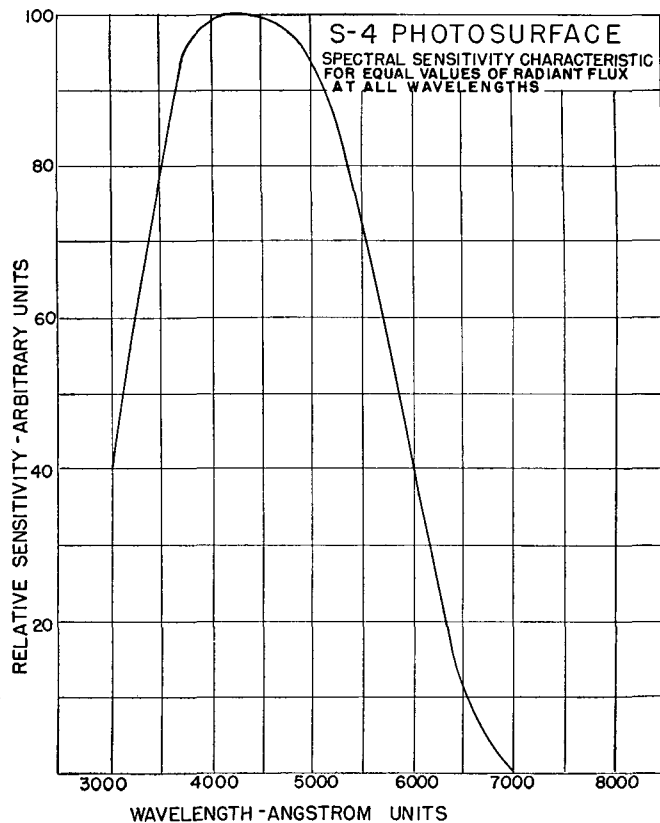
| PIN | CONNECTION |
|-----|------------|
| 1-9 | DYNODE     |
| 10  | ANODE      |
| 11  | CATHODE    |

### OUTLINE

### GL-931-A MULTIPLIER PHOTOTUBE

K-8277037

9-23-44



K-8639625

4-27-44